Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

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Correspondence

December 20, 1957

Dear Editor:

In the December 15 issue of the JOURNAL I notice the article on repair of the anterior cruciate ligament by Dr. Gibbens. I was delighted as this was the first time that I have seen a published report on the procedure. However, I was greatly disappointed when I read it, as all that happened was that I became confused.

I once witnessed a movie of the procedure using Paatsama's technique, but who can take notes in the dark? I don't know whether Dr. Gibbens was too brief in his writings or that the editors chopped it down, but the article needs elucidation and a series of sketches showing the operation in step form. Consider the fact that you had never seen this operation performed and had never seen pictures of the procedure. Now read the description for the drilling of holes in the femur and tibia. Oh, how a couple of sketches would have rounded out this point and left the practitioner with a clear understanding of how and where to proceed.

I commend Dr. Gibbens very highly on the article as this was needed in print, but I think your readers are due a clearer picture of the operation.

Very truly yours,
W. E. SNYDER
Haddonfield, N. J.

[This criticism is well taken. First, it should remind authors of what readers wish. Second, it called our attention to the fact that, after requesting considerable information to make the article more complete, the editor failed (mental lapse) to notice that the artist had not shown the thong penetrating the bones, and that an adequate legend had not been prepared (see correction on page 163)—ED.]

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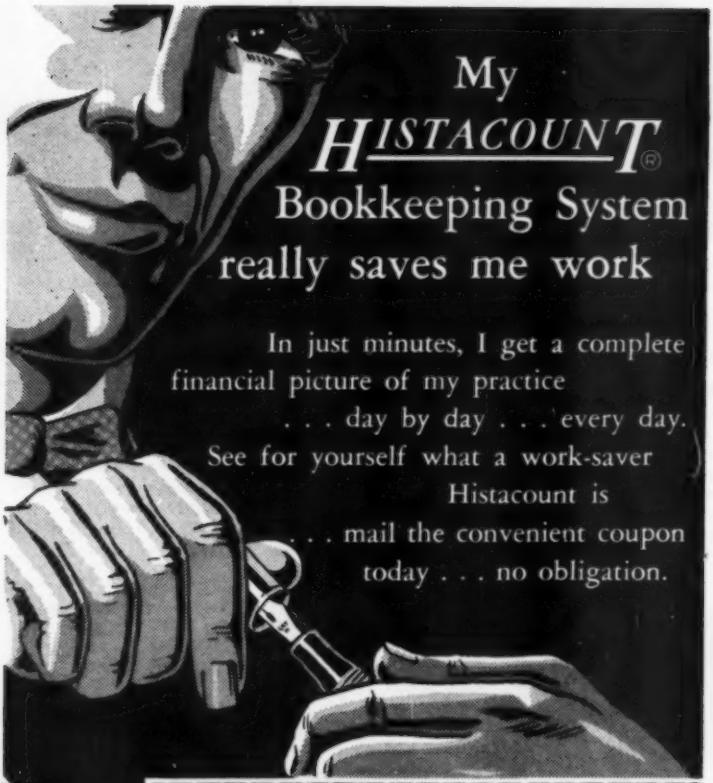
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Washington News

Legislative News.—The U.S.D.A. budget, submitted to Congress for fiscal 1959, included $60,744,890 for all research in ARS; Plant and Animal Disease and Pest Control, $42,132,000, with the latter including $15,000,000 for eradicating brucellosis (see JOURNAL, Jan. 15, 1958, adv. p. 10); Meat Inspection, $17,326,000; AMS (poultry), $7,000,000.

The President requested $2,792,904,000 for Department of H.E.W. for fiscal 1959. Among the specific amounts included were Food and Drug Administration, $10,664,000, and Public Health Service, $522,089,000. President Eisenhower, in his budget message, although stating Congress should enact legislation for construction grants to build medical school classrooms to meet medical and dental manpower needs, requested no specific funds. The regular $30 million for the laboratory research facilities program was requested.

The Ways and Means Committee held hearings January 24 on the Jenkins-Keogh **tax-deferment plan for the self-employed** (see JOURNAL, Sept. 15, 1957, adv. p. 6). Four witnesses, testifying for the American Thrift Assembly, which is composed of approximately 40 organizations including the AVMA, presented a strong case for the professions and other groups concerned. Early enactment of the legislation was urged to correct a long-standing inequity. In addition, the American Veterinary Medical Association filed a prepared statement with the Committee.

★ ★ ★ ★

New Bills.—H.R. 9904 (Rep. Cooley, D., Ga.) and S. 3076 (Sen. Ellender, D., La., by request) would amend Section 12, Act of May 29, 1884, relating to **research on foot-and-mouth disease** and other animal diseases. A new clause would be added permitting the Secretary of Agriculture to transport said virus in the original package across the mainland under adequate safeguards.

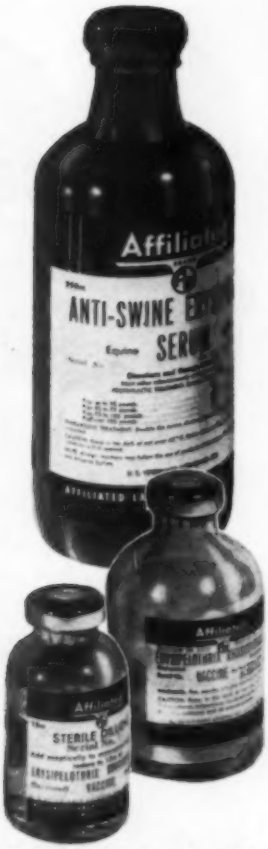
H.R. 10176 (Rep. Landrum, D., Ga.) and H.R. 10197 (Rep. Dixon, R., Utah) would amend the **Poultry Products Inspection Act** to clearly authorize the Secretary of Agriculture to waive the requirements of Section 10 thereof (P.L. 85-172, Aug. 28, 1957), under such conditions and to such extent as he prescribes in connection with inspection under the act prior to Jan. 1, 1959. S. 2931 (Sen. Talmadge, D., Ga.) would amend the Act to clarify the authority of the Secretary of Agriculture to pay for certain inspections and to authorize the processing of inspected and noninspected poultry and poultry products in the same establishments **prior to Jan. 1, 1959.**

S. 2917 (Sen. Thye, R., Minn.) would provide for a program of scholarships for college undergraduate and graduate level education, to be administered by the Commissioner of Education. Would authorize $25 million for fiscal year ending June 30, 1959, and $50 million fiscal 1960; thereafter, such amount as the Congress may determine necessary.

H.R. 10046 (Rep. Burdick, R., N. Dak.) would prohibit any official of the United States government from treating water supplies with fluoride compounds.

★ ★ ★ ★

Health Resources Advisory Committee.—Appointed to the Committee by the President, under the chairmanship of Dr. Elmer Hess, past-president of the AMA, were: Miss Frances Graff, Grand Rapids, Mich., nursing profession; four physicians—Drs. Mary L. Gloechner, Conshohocken, Pa., William B. Walsh, Washington, D.C., George O. Whitecotton, Oakland, Calif., and Franklin Yoder, Cheyenne, Wyo. The Committee advises the ODM director on health and medical problems pertaining to mobilization, as well as functioning as the National Advisory Committee to Selective Service.



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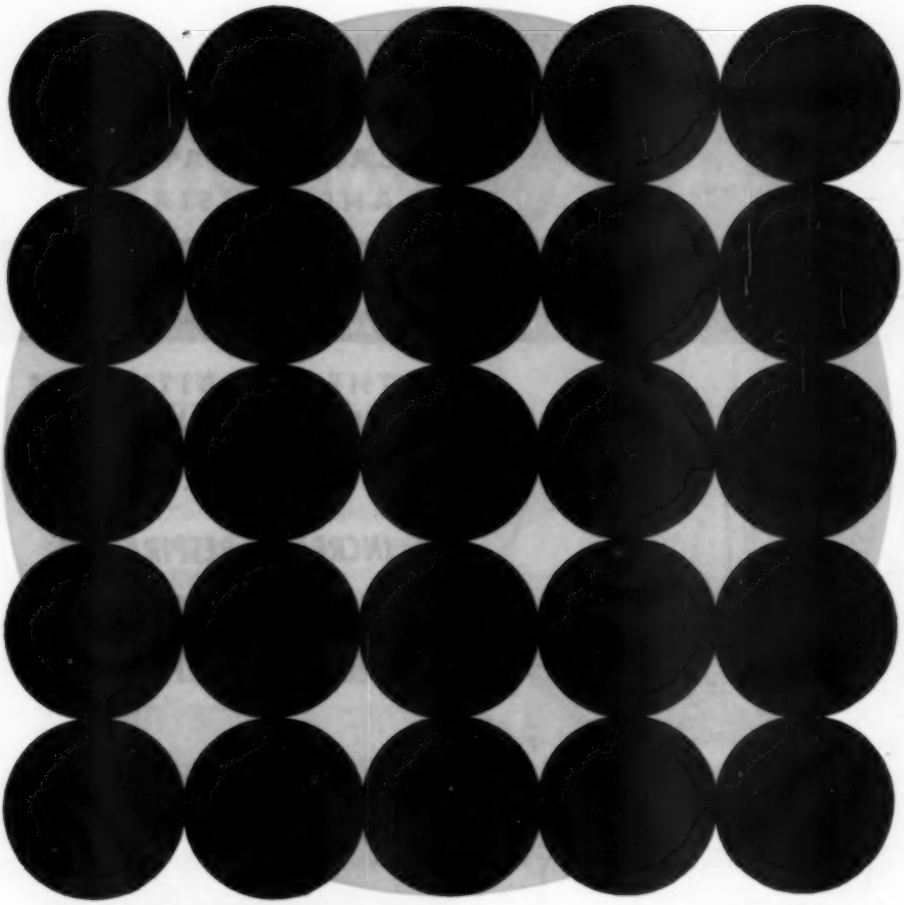

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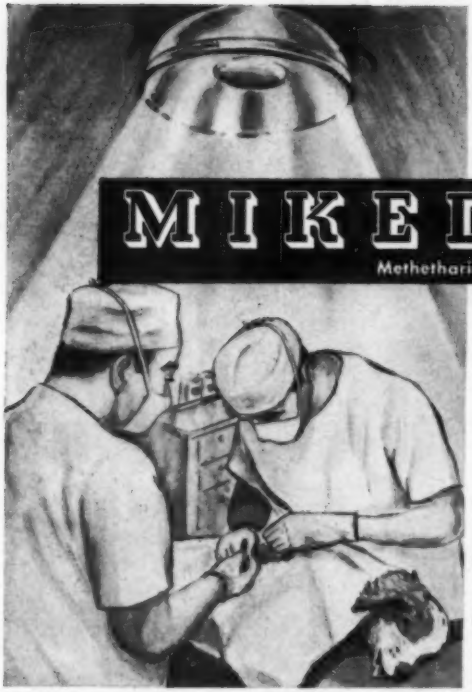

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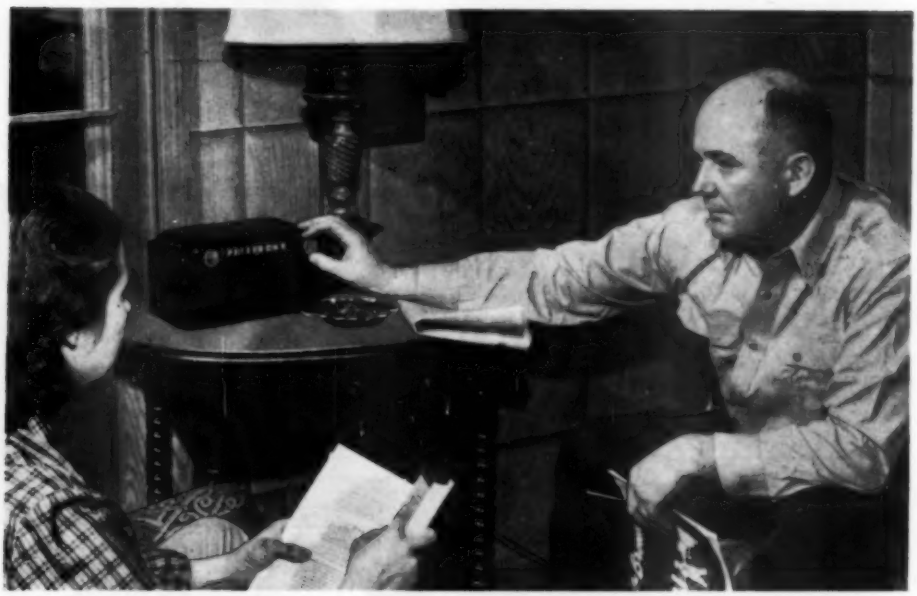

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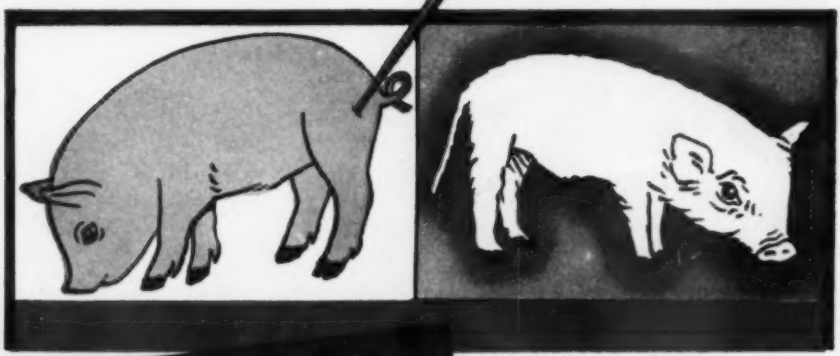

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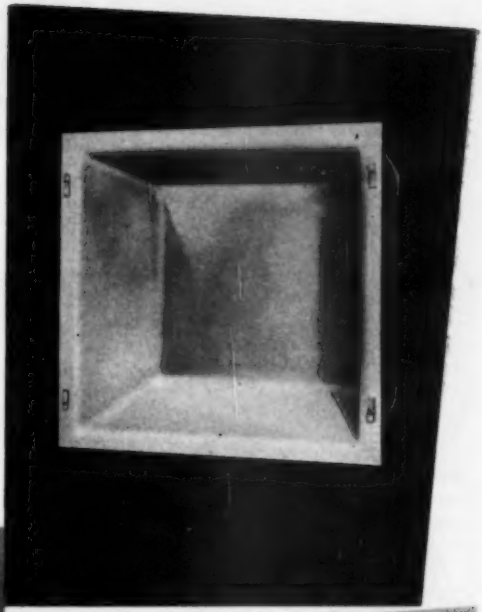

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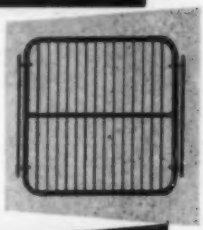

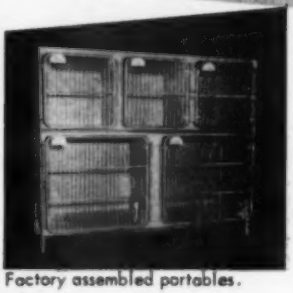

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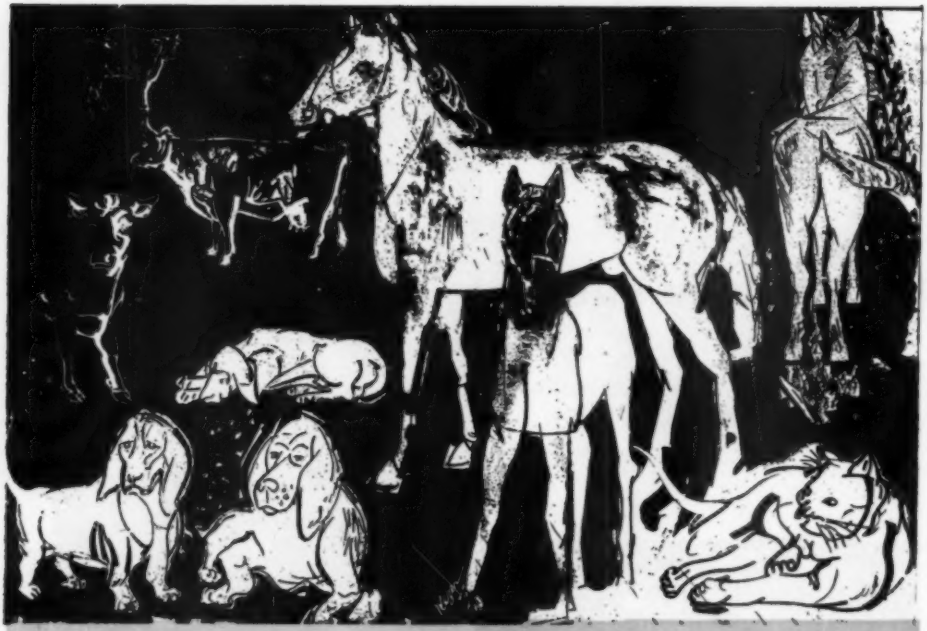

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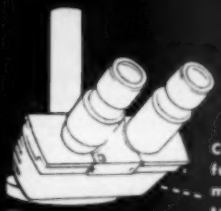

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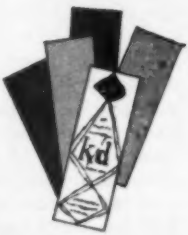

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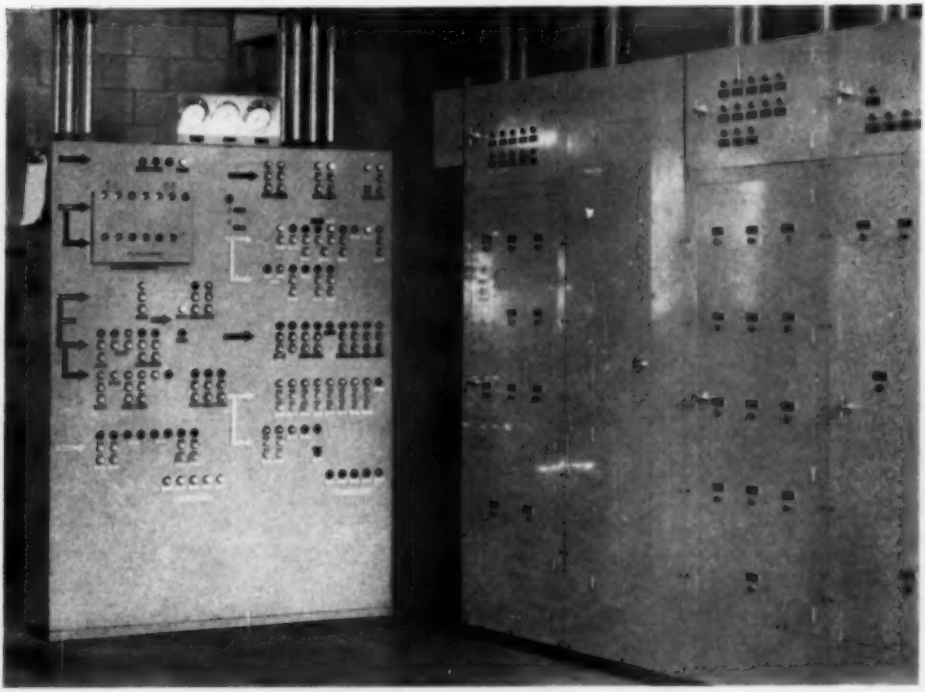

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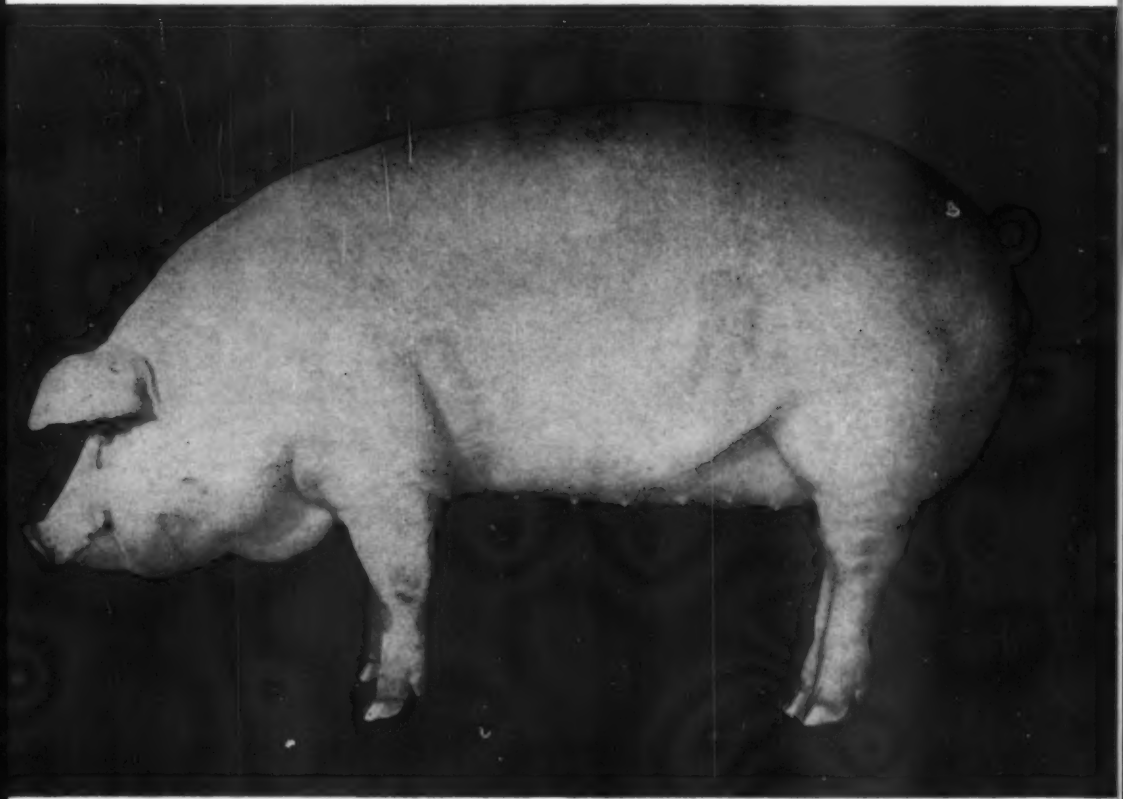

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of the American Veterinary Medical Association
Established January, 1877 Chicago 5, Illinois
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Evolution of the Military Veterinarian in the United States

Major SAMUEL W. THOMPSON, II, V.C., U.S. Army, and
MORRIS C. LEIKIND, M.Sc.

Denver, Colorado, and Washington, D.C.

VETERINARY MEDICINE is essentially a civil profession and yet it has a rich and significant military heritage. Many of the advantages which the profession enjoys today, and may possess in the future, have their origins in military necessity.

HISTORICAL BACKGROUND

Xenophon, the Greek historian and soldier (430-355 B.C.), was perhaps the first military veterinarian.[22] He commanded the "Ten Thousand" Greek troops in their retreat from the junction of the Tigris and Euphrates rivers to the Black Sea after the termination of the Peloponnesian War (*ca.* 400 B.C.).[2]

Apsyrtus (*ca.* 332-334 A.D.) bears the distinction of being a veterinary officer in the cavalry of Constantine the Great, in Asia Minor.[8,15,22] He was responsible for the veterinary service and, in addition, he instructed the officers and cavalrymen in animal husbandry and sanitation.[15] He accurately described glanders and its military significance.[21]

In 805 A.D., the Japanese emperor, Kammu, sent a "knight" to China to study veterinary medicine. This knight later published a book on the veterinary art.[1] During the feudal civil wars, every Japanese war lord was accompanied by a veterinarian.[1]

Even through the so-called "Dark Ages," the Mohammedans kept alive a tradition of science and learning. The Muslim scholars were compilers and commentators primarily—yet they made certain contributions to physiology and pharmacology, including treatises on veterinary medicine, e.g., works on the care and diseases of horses and of falcons. One of the greatest figures of the ensuing Renaissance period was Leonardo da Vinci (1452-1519), a versatile genius who excelled not only in painting, sculpture, and engineering, civil and military, but also in human and comparative anatomy. His anatomical studies, unpublished during his lifetime, survive in the form of drawings which include such subjects as the anatomy of the horse, ox, sheep, bear, lion, dog, cat, and many others.

The most important and influential figure in anatomy during this period, however, was Andreas Vesalius who, in 1543, published his great work on the structure of the human body. This masterpiece set the pattern for all subsequent work such as that of Carlo Ruini, who gave us the first modern anatomical study on the horse in 1598. The new anatomical discoveries came to fruition in the work of William Harvey who published his classic monograph in 1628. Through animal experiments, he discovered the circulation of the blood and established the experimental method in biological research. Stephen Hales (1677-1761), an Anglican curate, with his first measurements of the blood pressure of the horse, established the science of hemodynamics.

The invention of the microscope and development of scientific societies and journals in the early 1700's had far-reaching influences on veterinary medicine. Thus, the veterinarian of the eighteenth century already had a considerable reser-

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voir of knowledge and tradition to draw on for further progress.

Claude Bourgelat, the founder of the Royal Veterinary School of Lyon (1761) and Alfort (1765), performed various veterinary services for the mounted troops of King Louis XV of France[15] and is perhaps the first military veterinarian of modern Europe. John Stanley, in 1759, became veterinary surgeon to a new regiment in the British Army known as the Nineteenth Light Dragoons.[21] In 1777, John Gottlieb Wolstein established a veterinary school in Vienna for the purpose of educating military veterinarians.[15] However, during the Revolutionary War (1773-1781), while the armies of the major European powers were beginning to obtain the services of graduate veterinarians, the artillery and horse regiments of General George Washington's army were being served by horseshoers and farriers.[20] Even during the War of 1812, treatment of sick animals in the American Army was the responsibility of the commanding officer of a unit, his horseshoer, or farrier.

—AFIP photograph

Fig. 1—The cavalry veterinary sergeants appointed in 1861 wore the uniform depicted by the sergeant at the right.

In 1796,[16] veterinarians were serving the British Army as regimental officers responsible to the regimental commander. In 1881, this veterinary service was organized into a special department, and later (1903) it was changed to an army veterinary corps. By the time the U.S. Army Veterinary Corps came into being, in 1916, the veterinarians of the British Army held commissioned rank up to and including major general.

EARLY VETERINARY SERVICE IN THE U.S. ARMY

During the 1800's, veterinarians were accorded commissioned status in the Swedish, French, German, and Austrian armies. When Captain George B. McClellan, U.S.A., later to become major general in the Civil War,[17] was detailed as an observer with the Allied Armies in the Crimean War (1854-1856), he was afforded an opportunity to study the veterinary service of the French and British armies. In 1856, he recommended that a veterinary school be established in the U.S. Army for the training of veterinarians and cavalry officers. At that time, veterinary service in the Army was still being provided by horseshoers, farriers, and local civilian veterinary surgeons hired by the Quartermaster's Department.[5]

In 1861, the War Department established two cavalry regiments and authorized each[27,28] to have one veterinary sergeant (fig. 1).[12] Two years later,[24] Congress authorized each regiment of cavalry to include one veterinary surgeon with the rank of regimental sergeant major. Subsequently, the War Department prescribed the method by which candidates would be examined and specified that they would be appointed by the Secretary of War. In 1879, appointments as veterinary surgeons in the Army were limited to graduates of established and reputable veterinary schools.[32]

During the Civil War, one veterinary surgeon was authorized for each regular and volunteer cavalry regiment.[29] In addition, several civilian veterinarians were employed by the Quartermaster's Department.[22] Although it has been stated[11,16] that President Lincoln offered the rank of lieutenant to several graduate veterinarians during the war, these data are not verified.[20] On at least one occasion, the President had the opportunity to commission a graduate veterinarian who had declined an appointment as a veterinary sergeant and, in fact, did commission him a quartermaster.[18]

In 1866, four additional cavalry regiments were authorized for duty in the oc-

cupation of the South and in the West.[10] These new regiments each were authorized an additional veterinary surgeon with the rank of regimental sergeant major.[21] Thus, the six old cavalry regiments had one veterinary surgeon each, receiving $75 a month, while the new regiments had two each, one receiving $100 and the other $75. This inequality existed until after the Spanish American War. In the same year, the status of the military veterinarian was altered by a ruling of the Secretary of War, which held that veterinarians were civilian employees and not members of the Army. They continued to receive the same pay but had no authority over enlisted men; they were deprived of retirement privileges, allowances for quarters, fuel, and rations. This condition persisted for 45 years,[11,19] or until after the Spanish American War (fig. 2).[12]

Dismayed by the tremendous loss of horses and mules experienced during the Civil War, General Grant, who was an expert horseman,[24] induced Congress in 1868 to employ Mr. Dunbar, a Canadian farmer, for one year to lecture to the veterinarians and farriers of the Army.[18] Mr. Dunbar, a rather controversial figure, claimed to have discovered a means of trimming horses' feet which prevented lameness. This appointment represented a sincere desire on the part of General Grant to improve the veterinary service of the Army.

General Philip Sheridan, who was in command of the Cavalry Corps of the Army of the Potomac at the close of the Civil War, visited Europe as an observer with the Prussian Army during the Franco-Prussian War and, while there, observed the status of the veterinary corps of the Prussian military establishment. In 1887, when he became chief of staff, he took an active interest in improving the veterinary service of the Army. He is reported to have made plans for a professional corps of commissioned veterinary officers, but he died before he was able to put these plans before Congress.[19]

During the years between the Civil and Spanish American wars, repeated but unsuccessful efforts were made to obtain congressional action which would improve the veterinary service of the army and grant commissioned status to veterinarians. In 1879, the Quartermaster's Department was authorized to employ a limited number of civilian veterinarians as inspecting surgeons or department veterinary surgeons.[22] The quartermaster also hired several civilian veterinarians as inspectors of animals at some of its larger animal depots.

—AFIP photograph

Fig. 2—The cavalry veterinary surgeon of 1888, a civilian employee of the army, is depicted by the nonuniformed man in white.

During the Spanish American War, the number of military veterinarians authorized for the cavalry was not increased. The cavalry veterinarians were graduates of reputable schools, but a large number of civilian veterinarians, many of them products of diploma mills, were employed for duty with the quartermaster and, for the first time, with the artillery.

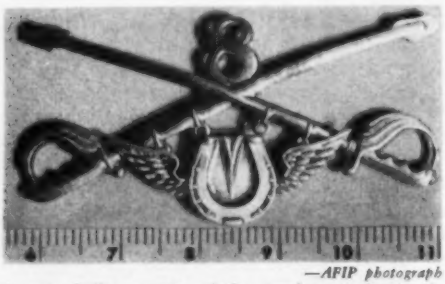
The embalmed beef scandal and other subsistence supply problems encountered during the Spanish American War led to the establishment of a meat-inspection subsistence department in the Army in 1901.[23] A veterinarian was employed by the Subsistence Department of the Army to operate this new service. By 1906, four additional veterinarians were added to the staff and meat inspection was established as a function of the veterinarian in the Army.[6]

At the close of the war, Congress provided for a veterinary sergeant in each battery of field artillery, in addition to veterinarians authorized for the cavalry and hired by the Quartermaster's Department.[6] In 1899, the United States became involved in the Philippine insurrection. In the same year, the Army was reorganized and two grades of veterinarians were pro-

vided for the cavalry. The senior grade was authorized the pay and allowances of a second lieutenant; the junior grade, the pay and allowances of a sergeant major.[25]

In 1900, when the Army furnished an expeditionary force for the Boxer Rebellion in China as part of an international military expedition,[9] the United States was the only one of this seven-nation alliance which did not have a corps of commissioned veterinary officers within its Army. In comparison, the Japanese Army had established a veterinary service in 1871,[1] and four years later it was separated from the medical department and designated an independent unit. In 1879, the Japanese appointed an army veterinary general.

In 1901, the U.S. Army was again reorganized[26] and the strength of the cavalry and artillery was significantly increased. Two veterinarians were authorized for each regiment of field artillery, to make a total of 42 veterinarians, all of equal rank. They drew the pay and allowances of a second lieutenant mounted, and ranked above enlisted personnel and cadets but below commissioned officers. The uniform prescribed for cavalry and artillery veterinarians was that of an officer without the shoulder straps but with the "U.S." collar device (fig. 3). The reorganization



—AFIP photograph

Fig. 3—Collar insignia of the cavalry veterinarian in 1914.

did not alter the hiring of civilian veterinarians by the Subsistence and the Quartermaster's Department for meat inspection and other supply activities.

ESTABLISHMENT OF A VETERINARY CORPS

Through the early 1900's, several legislative proposals were introduced in Congress to consolidate the various veterinary services of the Army and to authorize a responsible status for the military veterinarians. On June 3, 1916, Congress passed the National Defense Act, which for the first time provided for a separate corps and a commissioned status. The veterinary services of the Cavalry, Field Artillery, and Quartermaster Corps were combined within the Medical Department as the Veterinary Corps. All qualified uniformed and civilian veterinarians on duty with the Army were given an opportunity to be integrated into this new corps with ranks from second lieutenant through major, depending upon the length of their military service. Thus, nearly 1,600 years after Constantine appointed a veterinarian to the status of an officer in the legions of Rome, the first veterinarian was commissioned an officer in the U. S. Army.

The United States entered World War I shortly after the passage of the new act and before an effective veterinary corps could be organized. However, the corps rapidly took form and expanded from an initial strength of less than 100 officers to over 2,000 at the close of the war. During the conflict, military veterinarians functioned in a variety of capacities. They provided veterinary service for mounted units, inspected meat and dairy products intended for army purchase, and conducted laboratory services and research.

Until 1922, except for June to November of 1917, an officer of the Medical Corps functioned as chief of the Veterinary Division of the Medical Department. Veterinarians were not authorized to hold permanent grades above the rank of major, but several were temporarily promoted to the rank of lieutenant colonel and colonel in the National Army of World War I. At the end of the war, the corps was quickly reduced in strength as the Army demobilized.

In the National Defense Act of 1920, provision was made for the continuance of the Veterinary Corps and for the promotion of veterinary officers to the ranks of lieutenant colonel and colonel on a permanent basis in the Regular Army, Officer Reserve Corps, and National Guard. Between 1920 and the beginning of World War II,[13] a series of army regulations were promulgated setting forth the duties, functions, and responsibilities of the Veterinary Service and its relationship to the Medical Department and the Army as a whole. The Army Veterinary School, established during World War I as a meat and dairy hy-

giene training installation in Chicago, Ill., increased the scope of its activities, and a postgraduate course of instruction for veterinary officers was instituted shortly before the move to the Walter Reed Army Medical Center in Washington, D.C., in 1924. Later, a school of instruction for enlisted technicians was established. Reserve officers' training corps units were authorized and activated at four colleges of veterinary medicine in the early 1920's.

When the United States entered World War II in 1941, the Army and Navy were set up as provided by the National Defense Act of 1920; however, emergency war powers were granted the President by various enactments of Congress, permitting rapid expansion of the Armed Forces by executive order.

During the war, the strength of the Veterinary Corps was greatly expanded by calling reserve officers to active duty or by commissioning nonreservists. The regularly authorized strength of the Corps was not increased, but a total of more than 2,000 officers served in the Corps during the war, 85 to 90 per cent of these engaged in food inspection activities.[13] During this period, over 27 billion pounds of foods of animal origin were inspected at the time of army procurement. Of this amount, 5.3 per cent was rejected. Converted to monetary terms, this amounted to a saving of over $88 million to the government.[14]

In the performance of this tremendous food inspection activity and in conjunction with the other training, animal service, laboratory and research activities of the Corps, military veterinarians of the Army served in every corner of the world. In March, 1942, a veterinary officer was promoted to the temporary rank of brigadier general for the first time.

PEACETIME VETERINARY SERVICE

At the conclusion of the war, many temporary officers were commissioned in the Army Reserve, a few applied for commissions in the Regular Army Veterinary Corps, and many reservists remained on extended active duty. The National Security Act of 1947 provided for a greatly expanded peacetime Army, Navy, and Air Force and increased the size of the Veterinary Corps to 189 regular officers. In addition, a sizable number of reservists were maintained on active duty. New congressional legislation required veterinarians to be initially commissioned as second lieutenants rather than first lieutenants, as had been the practice since the mid-1930's. However, the Officer Personnel Act of 1947 authorized a permanent grade of brigadier general to one veterinary officer. During 1948 to 1949, veterinary reserve officers' training units were re-established at six colleges of veterinary medicine and functioned there until 1956.

In 1949, the National Security Act was amended, the most notable provision concerning the Veterinary Service being the establishment of a separate Air Force Medical Service. At this time and until January, 1950, the Veterinary Service of the Air Force was provided by two veterinary activities located in two different directorates of the Air Force Medical Service. In January, 1950, with the approval of the Assistant Secretary of the Air Force, the functions and staff of the two veterinary activities were consolidated into a single Veterinary Service. The chief of this service, a colonel, was raised to the rank of brigadier general in June, 1953. The following month, military veterinarians were authorized to receive the same professional allowances as medical and dental officers of the Armed Forces. In 1954, Congress provided that veterinarians would initially be commissioned first lieutenants.

Since 1946, the Veterinary Service of the Army and Air Force have continued to be active in food hygiene. In recent years, army veterinarians have also inspected an estimated 90 per cent of highly perishable and expensive foods of animal origin used by the Navy and Marine Corps.[14] They are also actively engaged in preventive medicine, radiological and bacteriological research, laboratory medicine, laboratory animal medicine, pathology, and various research services essential to the national defense. A number of army and air force veterinary officers have been detailed to the Armed Forces Institute of Pathology, Atomic Energy Commission, Navy, and other groups within our defense establishment which require their services in research programs.

References

[1]Burns, K. F.: The History of Veterinary Medicine in Japan. J.A.V.M.A., *113*, (1948): 226-230.
[2]Durant, W.: The Life of Greece. Simon & Schuster, New York (1939): 460.
[3]Durant, W.: The Life of Greece. Simon & Schuster, New York (1939): 489.
[4]Eakins, H. S.: History of the Veterinary Service,

U.S. Army. Army Vet. Bull., *15*, (1925): 191-206.
[5]Eakins, H. S.: History of the Veterinary Service, U.S. Army. Army Vet. Bull., *15*, (1925): 241-246.
[6]Eakins, H. S.: History of the Veterinary Service, U.S. Army. Army Vet. Bull., *16*, (1925): 8-23.
[7]Eakins, H. S.: History of the Veterinary Service, U.S. Army. Army Vet. Bull., *16*, (1925): 53-67.
[8]Gibbon, E.: The Decline and Fall of the Roman Empire. Random House, New York (*ca.* 1942): 505-560.
[9]Hayes, C. J.: A Political and Cultural History of Modern Europe. Macmillan Co., New York (1939): 531.
[10]Herr, J. K., and Wallace, E. S.: The Story of the U.S. Cavalry, 1775-1942. Little, Brown & Co., Boston (1953): 76-144.
[11]Hershberger, F. C.: History of the United States Army Veterinary Corps. Cornell Vet., *34*, (1944): 52-64.
[12]Holabird, S. B.: Uniforms of the Army of the United States, 1774-1889. G. H. Buek & Co., New York, *ca.* 1890.
[13]McCallam, J. A.: The Army Veterinary Service. J.A.V.M.A., *109*, (1946): 341-346.
[14]McCallam, J. A.: The Army Veterinary Corps. Army, Navy and Air Force J., *16*, Oct., 1948.
[15]Merillat, L. A., and Campbell, D. M.: Veterinary Military History of the United States. Haver Glover Laboratories, Kansas City, *1*, (1935): 23-44.
[16]Merillat, L. A., and Campbell, D. M.: Veterinary Military History of the United States. Haver Glover Laboratories, Kansas City, 1, (1935): 99-100.
[17]Merillat, L. A., and Campbell, D. M.: Veterinary Military History of the United States. Haver Glover Laboratories, Kansas City, 1, (1935): 117-124.
[18]Merillat, L. A., and Campbell, D. M.: Veterinary Military History of the United States. Haver Glover Laboratories, Kansas City, 1, (1935): 155-172.
[19]Merillat, L. A., and Campbell, D. M.: Veterinary Military History of the United States. Haver Glover Laboratories, Kansas City, 1, (1935): 213-243.
[20]Miller, E. B.: Personal communication, Historical Division, SGO, Dept. of Army, 1957.
[21]Robb, C. J.: The First Military Veterinary Surgeon. Vet. Rec., *69*, (1957): 150.
[22]Sarton, G.: Introduction to the History of Science. Williams & Wilkins, Baltimore, (1927): 356.
[23]U.S. Army. Office of the Commissary General, Circular No. 3, June 7, 1901.
[24]U.S. Congress. Act of March 3, 1863 (Sect. 37).
[25]U.S. Congress. Army Reorganization Act of 1899.
[26]U.S. Congress. Army Reorganization Act of 1901.
[27]U.S. War Department: General Order No. 16, May 4, 1861.
[28]U.S. War Department: General Order No. 48, July 31, 1861.
[29]U.S. War Department: General Order No. 110, April 29, 1863.
[30]U.S. War Department: General Order No. 259, Aug. 1, 1863.
[31]U.S. War Department: General Order No. 56, Aug. 1, 1866.
[32]U.S. War Department: General Order No. 36, March 31, 1879.
[33]U.S. War Department: Circular No. 18, May 19, 1902.
[34]Woodward, W. E.: Meet General Grant. Horace Liveright, New York (1928): 30.

Report on Zoonoses

The following items are from the reports *Morbidity and Mortality* issued weekly by the U.S. Department of Health, Education, and Welfare.

Newcastle Disease.—A laboratory worker, in Iowa, while working with embryonating eggs infected with Newcastle disease virus, accidentally spattered a droplet into his eye. The following day, the man had acute conjunctivitis and the virus was isolated from the eye. Recovery was complete in one week and the other eye remained normal. This was the fifth such case at that laboratory in recent years. The virus was recovered from three of these persons. —*Nov. 8, 1957.*

• • •

Tuberculosis, Avian type.—A patient in a sanitorium, in Kentucky, was found to have avian-type tuberculosis.—*Nov. 15, 1957.*

• • •

Encephalitis.—Three cases of western equine encephalitis, in man, have been confirmed, in Utah, and there were 2 other presumptive cases.—*Nov. 15, 1957.*

• • •

Psittacosis.—Psittacosis was positively diagnosed in three women with pneumonic infections, in California (*Nov. 15, Dec. 6, Dec. 13, 1957*), and in a boy with similar infection, in Oregon (*Dec. 6, 1957*). All of these persons had contact with aviaries of parakeets or other psittacine birds. Three more cases were reported in persons working in a turkey-processing plant in Oregon. The birds were from the same farm as was involved in the reported 1956 incident (*Dec. 13, 1957*). All seven patients were treated with tetracycline and recovered, but one person had a relapse after two weeks.

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Brucellosis.—Of 13 cases reported as brucellosis, in California, in the June 22, 1957 report, further evaluation indicates that 11 of the 13 were probably not brucellosis. They have been excluded from the annual total.—*Dec. 13, 1957.*

• • •

Rabies.—A student, in Michigan, was bitten on the finger by a bat found on the

basement floor of his residence. The bat died two days later and Negri bodies were found in its brain; also in the brains of inoculated mice after two passages. The actions of the mice were not typical of those inoculated with rabies street virus. --*Dec. 6, 1957.*

A cat attacked a child and an old man, in Pennsylvania, and Negri bodies were later demonstrated in its brain.—*Nov. 30, 1957.*

Squirrel Has Vaccinal Rabies

A pet squirrel given 1.5 cc. of modified anti-rabies vaccine (low egg passage, Flury strain), when 6 months old, became ill 21 days later. On the fourth day, it developed convulsions and died. Negri bodies were not found in its brain, but inoculated mice showed signs of rabies in 14 days. This vaccine is safe and effective for dogs over 3 months and cats over 6 months old, but it has not been adequately tested nor is it recommended for other species.—*New Mexico Anim. Dis. Rep., Nov., 1957.*

Chronic Brucellosis in Man.—The clinical features of chronic brucellosis in man are so indistinct that they are often diagnosed as psychoneurosis, influenza, or sarcoidosis. A survey of a rural practice area, in Britain, showed a 21 per cent incidence of sensitivity to brucellin.—*Brit. Med. J. (Nov. 9, 1957): 1082; 1100.*

Hydatidosis in Greece.—Examination of over 300,000 sheep in Greece showed no hydatidosis in lambs, 9.3 per cent in 2-year-olds, and 54 per cent in adults. Of 55,000 swine, 2.33 per cent were affected. Infection in cattle is given as 29.0 per cent and in goats as 3.64 per cent.—*Off. Internat. des Épizoot. (May, 1957): 475.*

Transmission of Infectious Hepatitis in Man.—Two boys, bitten by different dogs and each given an injection of tetanus toxoid, both became acutely ill with hepatitis (1 case associated with infectious mononucleosis) six weeks later.

The answer to an inquiry as to the source of the hepatitis was that hepatitis has never been reported from dog bites, since the disease in dogs is not due to the same virus as infectious hepatitis in man. Infectious mononucleosis also has "never been reported to be produced by dogs."

It was assumed that the hepatitis was due to the use of a contaminated needle or syringe used in giving the toxoid. Boiling needles and syringes for ten minutes in water will not destroy the virus of infectious hepatitis. Autoclaving for 15 minutes at 250 F., or one hour in a dry oven at 329 F., are more reliable procedures.—*J.Am.M.A. (Dec. 7, 1957): 1893.*

Tetanus in Man in the United States

Tetanus continues to be 60 per cent fatal despite the effectiveness of mass tetanus prophylaxis in World War II, and despite evidence of persistence of the ability to respond to recall antigenic stimuli for at least ten years.

A four-year survey, to 1955, indicates an annual morbidity of 0.3 cases and 0.2 deaths per 100,000 population. The incidence is highest in the southern states—1.5 in Florida, 1.3 in Alabama, 1.0 in Georgia, and 0.9 in Mississippi, Arkansas, and Louisiana. In the northern half of the U.S., the morbidity was over 0.2/100,000 only in Connecticut, Illinois, Minnesota, Montana, and Idaho.

The disease has a sharp seasonal pattern, increasing in the late summer and fall and dropping abruptly during the winter.—*Am. J. Pub. Health (Dec., 1957): 1493.*

Horse Grippe in Europe

A condition called "contagious catarrh of the respiratory tract" or "horse grippe" is reported to have been on the increase since 1955 in Germany. In 1955, it affected young colts only but, in 1956, animals of all ages, sexes, and breeds were affected.

The incubation period is two to five days and the disease is marked by a temperature of up to 41 C. (105.8 F.), a dry painful cough lasting up to three weeks, and a seromucous nasal discharge. The conjunctiva is reddish and sometimes slightly icteric. There is a decrease of erythrocytes (4.2 to 5.5 billion) and an initial drop in leukocytes (8,000) followed, at the stage of bacterial complications, by a leukocytosis (14,000 to 20,000).

Therapeutically, sulfonamides, especially sulfathiazole, have long been used. In 1955, a penicillin-streptomycin combination was tried but was not satisfactory. Good nursing and supportive therapy are indicated. No satisfactory vaccines are available. An animal can contract the disease several times.—*W. Schulze and Th. Hiepe, in Monatsh. f. Vet-med. (July 1, 1957): 344.*

The Military Veterinarian's Role in the Fresh Milk Supply for United States Armed Forces in Europe

Major GEORGE M. GRIMES, V.C., U.S. Army

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A SAFE SUPPLY of wholesome fresh milk and dairy products worth more than $15 million was supplied to American military personnel and their families in Europe in 1956. Members of the United States Army Veterinary Corps played the major role in assuring the safety and quality of the products supplied—they validated and helped establish areas free of bovine tuberculosis; they approved and assisted in developing sanitary sources of supply; and they instigated a continuing, vigilant inspection program.

Instead of the less palatable powdered or canned milk product, our military men and women in Europe have fresh dairy products. Fresh milk is a popular drink in mess halls, snack bars, hospitals, and homes.

These products originate from sources approved and inspected by Veterinary Corps offices in Denmark, Holland, Germany, France, and Austria. The U.S. military zone of Germany is the area of largest consumption; however, large quantities are also consumed at U.S. military stations in France, Italy, and other parts of Germany (fig. 1). Veterinary corps officers inspect the products at the source of supply and points of delivery, insuring safety and wholesomeness from cow to consumer.

Stimulated, at least in part, by the desire to sell milk to the U.S. Army, which required that the herds be free of bovine tuberculosis, Denmark and Holland are reported to be entirely free[1,6] of this disease, and active eradication programs are underway in other countries. Also, Veterinary Corps insistence on high sanitary standards for milk processing plants has caused a general improvement in sanitary conditions in the affected areas, a premium being paid for milk intended for U.S. Army contracts.

During World War II, Americans abroad thirsted for fresh milk but, because of the high incidence of bovine tuberculosis and the low standards of sanitation in most European countries at that time, drinking milk from native sources was forbidden.

As soon as the fighting troops became occupying troops, the theater command sought to establish a fresh milk supply.

Many dairy cattle had been slaughtered for meat or killed during the war, and many of those remaining were tuberculous.[8] Only Denmark and Norway were practically free of the disease. In 1951, infection in both countries was less than 0.5 per cent.[11]

In Europe, during the war, distribution of fresh milk in bulk containers was the normal practice. At the end of the war, dairy sanitation was at a low ebb. Dairies suffered from lack of repair and some plants had been damaged during battles.

FIRST SOURCE OF SUPPLY—DENMARK

In Denmark, the dairy industry had suffered less damage than in other countries. Surveys made early in 1946 indicated that this country could furnish high quality fresh milk, from cattle free of tuberculosis, for U.S. contracts.[21]

On April 24, 1946, the first fresh milk contract was drawn between the United States and the Danish Export Committee, and a veterinary corps officer was assigned to Denmark to supervise and inspect the process.[24]

Originally, one plant was approved. As problems were solved, 14 plants were approved. Raw milk from local dairy herds was processed, pasteurized, bottled, and shipped by truck to the Danish-German border, 30 to 125 miles from the plants.

Veterinary corps officers and Danish veterinarians worked together to insure plant sanitation and product wholesomeness. Veterinary inspectors at the border made final inspections and selected samples for laboratory analysis. A system of coding was instigated to identify the dairy and date of production for milk which did not meet the requirements.

In January, 1955, the Danish Export

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Committee initiated an entirely new program.[4] A centralized bottling plant was equipped with American-type bottling machines, and the plants which had previously pasteurized and bottled the product then became raw milk-collecting stations. There was continuous inspection of the raw milk supply by a roving inspector, and also full-time inspection by a veterinary technician at the pasteurization plant.

Among the first problems encountered was that of adequate containers. It was necessary to use glass bottles (approx. 2 million per mo.) but these were not available in Denmark and, to manufacture them, potash had to be brought from the Russian zone of Germany.[21] The return of empty bottles was a constant and costly problem; so by 1955, all the milk supplied on U.S. contracts was in paper cartons.

During the Berlin blockade, June, 1948, to May, 1949, fresh milk was flown into Berlin. After preparation in Denmark, it was shipped by rail to Frankfurt and

Fig. 1—Map showing sources of supply and delivery areas for over-all program in Europe.

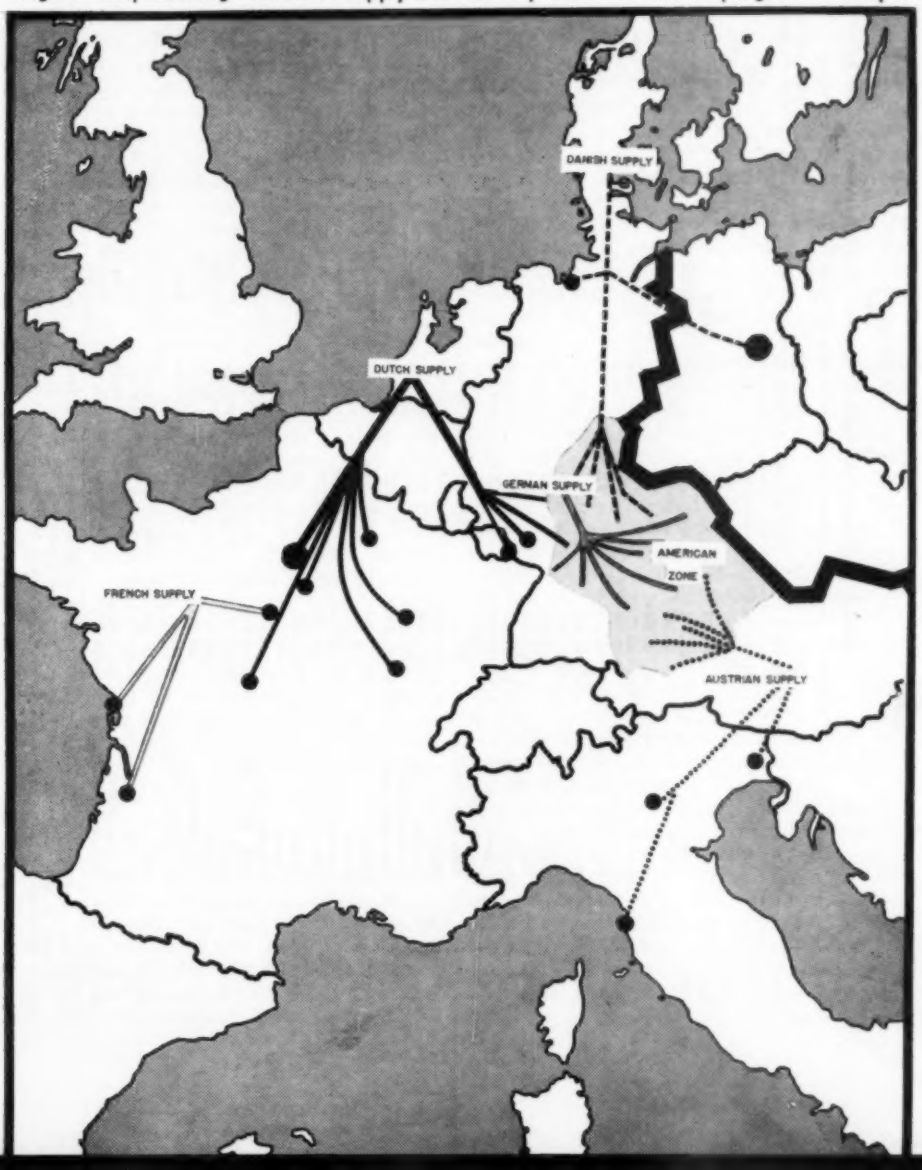

TABLE I—Quantity of Fresh Milk and Dairy Products Inspected in Europe*

Year	Product	Denmark	The Netherlands	Germany	France	Austria	QM Contract total for year	European exchange system[1]	Total pounds	Total quarts
1946	Milk	5,147,755	.....	.....	.....	.....	5,147,755	.....	5,147,755	2,573,877
1947	Milk	27,514,592	.....	.....	.....	.....	27,514,592	.....	27,514,592	13,757,296
1948	Milk	35,108,396	.....	.....	.....	.....	35,108,396	.....	35,108,396	17,554,198
1949	Milk	37,535,574	.....	.....	.....	.....	37,535,574	.....	37,535,574	18,767,787
	Cream	22,612	.....	.....	.....	.....	22,612	.....	22,612	11,306
1950	Milk	37,528,535	603,798	.....	.....	.....	38,132,333	.....	38,132,333	19,065,167
	Cream	816,325	24,829	.....	.....	.....	841,154	.....	841,154	420,577
	Cottage cheese	372,705	4,071	.....	.....	.....	376,776	.....	376,776	.....
	Misc. dairy prod.[3]	769,212	11,760	.....	.....	.....	780,972	.....	780,972	.....
1951	Milk	23,157,429	27,635,108	.....	.....	.....	50,792,537	3,977,210	54,769,747	27,384,873
	Cream	1,557,855	2,013,574	.....	.....	.....	3,571,429	34,453	3,605,882	1,802,941
	Cottage cheese	313,094	340,362	.....	.....	.....	653,456	14,851	668,307	.....
	Misc. dairy prod.	531,504	456,494	.....	.....	.....	987,998	329,007	1,317,005	.....
1952	Milk	41,157,962	51,706,963	6,100,316	1,726,570	.....	100,691,811	25,477,979	126,169,790	63,084,895[4]
	Cream	3,182,803	4,397,531	438,532	143,682	.....	8,162,548	328,398	8,490,946	4,245,473
	Cottage cheese	439,861	535,984	68,606	14,725	.....	1,059,176	110,600	1,169,776	.....
	Misc. dairy prod.	664,197	620,251	79,560	22,494	.....	1,386,502	3,463,479	4,849,981	.....
1953	Milk	33,342,476	52,172,146	22,691,762	4,954,111	1,445,247	114,605,742	24,128,458	138,734,200	69,367,100
	Cream	2,458,680	3,718,474	1,537,270	386,364	76,415	8,177,203	383,067	8,560,270	4,280,135
	Cottage cheese	354,239	501,577	204,243	18,942	9,657	1,088,658	229,268	1,317,926	.....
	Misc. dairy prod.	None reported	680,287	273,083	34,098	16,446	1,003,914	5,221,735	6,225,649	.....
1954	Milk	30,313,497	67,940,204	19,010,794	7,176,083	12,163,221	136,603,799	28,046,033	164,649,832	82,324,916
	Cream	1,946,963	3,647,755	1,008,181	396,352	609,069	7,608,320	296,782	7,905,102	3,952,551
	Cottage cheese	239,990	538,669	127,112	57,950	82,759	1,046,480	202,061	1,248,541	.....
	Misc. dairy prod.	552,323	1,112,265	309,499	12,033	66,279	2,052,399	3,392,259	5,444,658	.....
1955	Milk	29,831,540	54,536,343	27,227,669	6,717,950	19,716,176	138,029,678	30,866,648	168,896,326	84,448,163
	Cream	1,746,372	3,068,714	1,372,812	382,548	861,915	7,432,361	428,718	7,861,079	3,930,539
	Cottage cheese	271,018	423,723	171,997	43,800	122,292	1,032,830	183,720	1,216,550	.....
	Misc. dairy prod.	640,433	2,137,925	635,991	100,753	656,434	4,171,536	5,204,307	9,375,843	.....
1956	Milk	33,613,231	53,434,428	24,512,150	8,873,499	21,914,330	142,347,638	33,950,435	176,298,073	88,149,036
	Cream	1,506,608	2,297,124	1,163,601	1,194,283	795,689	6,957,305	553,381	7,510,686	3,755,343
	Cottage cheese	321,129	428,713	132,498	83,940	150,847	1,117,127	324,315	1,441,442	.....
	Misc. dairy prod.	471,087	2,336,428	472,062	133,167	347,744	3,760,488	7,496,338	11,256,826	.....
Total for 11-yr. period	Milk	334,250,987	308,028,990	99,542,691	29,448,213	55,238,974	826,509,855	146,446,763	972,956,618	486,478,308
	Cream	13,238,218	19,168,001	5,520,396	2,503,229	2,343,088	42,772,932	2,024,799	44,797,731	22,398,365
	Cottage cheese	2,312,036	2,773,099	704,456	219,357	365,555	6,374,503	1,064,815	7,439,318	.....
	Misc. dairy prod.	3,628,756	7,355,410	1,770,195	302,545	1,086,903	14,143,809	25,107,125	39,250,934	.....

*Extract from Report of Veterinary Meat and Dairy Hygiene Inspection (DA8-134). [1]Pounds of product inspected for European Exchange System is not reported as to country of origin; [2]Quarts are listed only for fresh pasteurized milk and cream (1 lb.= 1 pt.); [3]miscellaneous dairy products include: buttermilk, chocolate milk, concentrated milk, cream cheese, yoghurt, and sour cream; [4]increase in quantities due primarily to increased requirements of an expanded U.S. defense force in Europe.

transferred to nearby air bases for transloading into planes. Veterinary technicians made their usual inspections in the preparation and delivery of the product. They also met new problems in flight conditions, compartment temperatures, and altitude (5,000 to 6,000 ft.) changes. In Berlin, a veterinary inspector checked the product as it was unloaded from planes into refrigerated trucks for distribution in the city.[7]

Early shipments from Denmark to American bases in Germany and Austria were attempted in refrigerated trucks. These had been used during the war and were worn out. Finally, rail transportation was adopted and worked out satisfactorily. By September, 1946, deliveries were being made to seven major breakdown points in Germany and Austria.

The transportation of fresh, pasteurized, bottled milk from Denmark to Vienna, Austria, became the longest delivery route of its kind in the world (900 miles),[17] but a later route extended from Denmark through Salzburg, Austria, to Leghorn, Italy—more than 1,250 miles. In 1951 and 1952, when new sources of supply were approved, the length of delivery routes was reduced to an average of 400 miles[16] (fig. 1).

Early in the program, hospital laboratories near the delivery points tested samples of the finished product. Later, the Fourth Field Medical Laboratory at Heidelberg, Germany, was designated as the single official laboratory for examination of dairy products.

When supply sources in other countries became interested in bidding on the contracts, it was necessary that specifications be prepared in order that bidding could be on an equal basis. The first specification for fresh milk became effective on July 1, 1951.[18] It was frequently amended in order to cope with new problems as they developed.[19] Veterinary officers also prepared instructional letters, technical memoranda, directives, and standard inspection procedures.[20,22,25]

GROWTH OF THE PROGRAM

From 1946, when 2½ million quarts of fresh milk were procured, the program expanded rapidly. In 1956, more than 90 million quarts of fresh milk and cream were procured[5] (table 1). In the first three years of the program, only fresh pasteurized milk was obtained. However, in 1955, all of the fresh dairy products to which we are accustomed in this country were also made available.

SOURCE OF SUPPLY IN THE NETHERLANDS

Until 1950, Denmark was the sole source of supply. However, with the military manpower build-up, of 1950 to 1951, new sources were added. The Netherlands was added in 1950, Germany and France in 1952, and Austria in 1953.[6] Competition reduced the price from 17 cents per liter (1.056 qt.) to less than 14 cents per quart.[26]

In the winter, 1949 to 1950, all dairy cattle in the Netherlands were required by law to be tested. Approximately 16 per cent of the total cattle population reacted positively, but two provinces in the northern part of the country[27] and islands along the western coast were free of the disease. In July, 1950, the first fresh milk and dairy products were obtained from the tuberculosis-free areas.

The Dutch government, in 1951, made subsidy funds ($26 million) available for the eradication of tuberculosis, part of it from Marshall Plan aid. In 1956, the entire country was declared free of bovine tuberculosis.

An army veterinary inspector circulated in the raw milk supply area checking the quality control program, inspecting collecting stations for sanitation, and demonstrating procedures to be used on the farm and in the collecting stations.They introduced the "off-the-bottom" sediment test method which is now in practical use in the Netherlands.

The first specification for fresh milk limited the bacterial count for raw milk to 1,000,000 per milliliter, or less. Before the specification became effective, tests indicated the average count was approximately 2,870,000 per milliliter; by 1956, it was 230,200 per milliliter.[25]

The milk was transported from the collecting stations to the processing plant in insulated bulk tank trucks (fig. 2). There veterinary inspectors worked around the clock. They made sanitary inspections of the plant prior to the start of daily operations. Each step in the processing of the products was under close scrutiny. They made bacterial counts on each tank of raw milk. Pasteurization and cooling times and temperatures were under continual inspection. When the milk was pasteurized and the finished products were prepared, they

were packaged in American-made paper cartons. These finished products were closely inspected for all terms of the contract. They were then cased and loaded into precooled rail cars. Milk, buttermilk, cream,

Fig. 2—Photograph of an insulated tank truck which delivers the bulk raw milk from the collecting stations to the pasteurization plant.

chocolate milk, yogurt, sour cream, cottage cheese, and cream cheese were shipped from Holland to distribution points in Germany and France.

The delivered product seldom exceeded the maximum of 50,000 bacteria per milliliter and regularly tested less than 5,000 per milliliter.

The veterinary inspector in the plant also acted as the customs clearance officer and cleared sealed rail cars for transportation across international borders.

Beginning with the first shipments, sediment in bottled milk was a recurring problem. However, with improved methods, installation of filtering equipment, and the introduction of wetting agents for cleaning, the problem came under control.

The preparation of new products, including cottage cheese and cream cheese, presented some problems. The first cottage cheese produced was dry and gummy. It had 67 per cent moisture, whereas the contract permitted up to 80 per cent moisture, reflecting the zeal of the Dutch to more than comply with specifications. When raised to 77 per cent, a more palatable product resulted.[9]

The Dutch also supplied large quantities of concentrated milk to American air force personnel in North Africa.

Source of Supply in Germany

Bovine tuberculosis was widespread in Germany, and 30 to 40 per cent of the cattle were infected.[3] In 1950, surveys showed some dairy plants in Germany with modern equipment, but no areas free from bovine tuberculosis.[10]

In some cases, plant sanitation left much to be desired. In 1947, and later, typhoid fever was caused by milk that had been contaminated by refugees living in dairy establishments.[23]

Finally, in 1952, three areas in the northern part of Germany, near Oldenburg, were approved as sources of raw milk.[12] In developing these areas, the veterinarian for the Quartermaster Procurement Center worked directly with German dairymen. Special trucks were equipped with laboratory facilities in order to make bacterial surveys on the farms.[26]

The raw milk from the approved areas was shipped south (250 to 300 miles) in tank cars to a dairy built in a suburb of Frankfurt. Moha dairy, built with the aid of Marshall Plan funds, was modern, utilizing stainless steel throughout the plant for sanitary piping, storage tanks, and pasteurizers.

At the plant, the army veterinary inspectors performed approximately the same tasks as in Denmark and the Netherlands.

Source of Supply in France

More than 20 per cent of the dairy herds in France were tuberculous and milk for public consumption was usually not pasteurized—the French people boiled their milk.[29]

American government agencies cooperated in 1951 by helping the French government set up a quality control milk program by testing cattle for tuberculosis and correcting the sanitary deficiencies on the farms and in the milk plants.[1] In April, 1952, six dairies in France requested inspection and one was approved as a source of supply.[12]

The first shipments of fresh milk from France were in refrigerator cars with ice but no salt so the cars, when opened at destination, were 52 to 58 F. and bacterial counts were high. With salt added to the bunkers and fans installed to provide air circulation, the car temperatures were reduced to an acceptable 46 F.[13]

During July and August, 1952, the approved area was hampered by hot weather, drought, and foot-and-mouth disease. In 1953 and in 1956, the plant was temporarily suspended because of high bacterial counts.[2,14,15]

The French operation differed from the Dutch, Danish, and German sources of sup-

ply chiefly in that there were no intermediate raw milk-collecting stations between the dairy farmer and the plant.

SOURCE OF SUPPLY IN AUSTRIA

In 1952, dairy officials in Austria expressed a desire to sell milk to the U.S. Army. However, the tuberculosis rate was rather high (11%), bacterial counts were in the 100 millions, farm sanitation was poor, and the old pasteurization plant was in a poor state of repair.

Funds of the Mutual Security Agency were used to aid in tuberculosis eradication. Austrian veterinarians made the tests and an army veterinarian spot-checked the testing program. A plan for paying premiums for high quality raw milk was instigated and, by June of 1954, a majority of the bacterial counts were under 500,000 per milliliter.

There were revolutionary changes in dairy farm methods: Cattle were no longer housed with other animals such as chickens, goats, sheep, and swine; cloth strainers were replaced with sanitary filter discs; and care in storage, washing, and sanitizing farm milking equipment was improved.[30]

By June, 1954, the milk production area, consisting of approximately 3,000 farms, was declared free of bovine tuberculosis. A new plant with modern equipment was constructed and used for processing the product. The methods of operation and the veterinary inspection program were closely similar to those utilized at other approved sources.

VETERINARY INSPECTION AT POINTS OF DELIVERY

Veterinary inspection is a continuous process from point of origin to point of consumption. As each rail car of milk is delivered to a military installation, an army veterinary technician inspects the car and its contents for cleanliness, proper temperature, and transit damage. Samples are selected at random and submitted to the Fourth Field Medical Laboratory for analysis. This laboratory, originally located at Heidelberg, is now located at Landstuhl, Germany.

The vehicles which deliver the product to the mess halls and commissaries and the areas where the product may be stored or displayed are also inspected. Keep it clean, cool, and moving—are the basic tenets of the destination veterinary inspector.

VETERINARY ADMINISTRATION ORGANIZATION FOR THE PROGRAM

The over-all veterinary inspection for the program is under the direction of the chief veterinarian, Office of the Surgeon General, headquarters, U.S. Army, Europe.

The attending veterinarian of the Quartermaster Procurement Center, Frankfurt, Germany, coordinates the program with the quartermaster contracting officer. He is also in charge of the inspection at the Holland and Denmark branches.

There is also a veterinary corps officer in charge at or near each source of supply. He is assisted by the necessary number of veterinary officers and trained enlisted technicians stationed at the point of inspection.

The veterinary officer in charge at the Fourth Field Medical Laboratory is responsible for the official testing of the finished products from all sources of supply. He is also an advisor to the chief veterinarian. Routinely, he circulates to all the pasteurization plants where he inspects the laboratory methods.

SUMMARY

In 1946, bovine tuberculosis was widespread in Europe; today, Denmark and the Netherlands are considered free of this disease and other countries have extensive eradication programs under way.

In 1946, bacterial counts of raw milk often were in the tens of millions; today, raw milk intended for pasteurization and delivery on U.S. Army contracts seldom exceeds 500,000 bacteria per milliliter. The finished, delivered product usually has less than 5,000 bacteria per milliliter.

Some dairy plants which were in a deplorable condition as a result of war damage or lack of repair, through Marshall Plan aid, are now modern, well-equipped, and maintaining high sanitary standards. All of the fresh dairy products to which we are accustomed in this country are available to our military personnel in Europe. These products are of high quality and are produced in a sanitary manner.

How much the morale of our troops has been raised by having fresh milk and how many cases of malnutrition, tuberculosis, food poisoning, typhoid, or other diseases have been avoided can not be determined.

However, the safety and wholesomeness of these products are the result of a diligent and continuous inspection program by members of the U.S. Army Veterinary Corps.

References

[1]Annual Report of Medical Service Activities of the Chief Surgeon, EUCOM: Meat and Dairy Hygiene, chapter VI, Vet. Ser., Par. 28, 1951.
[2]Betzold, C. W., Colonel, VC, U.S. Army. Personal communication.
[3]Carter, Philip R.: Bovine Tuberculosis in Germany." Med. Bull., Medical Division EUCOM (Dec., 1946):65.
[4]Denmark Branch, Veterinary Detachment, Medical Group, 7779 Army Unit, U.S. Army: Brief History of Danish Milk Supply. June 14, 1956.
[5]Department of Army Report: Report of Veterinary Meat and Dairy Hygiene Inspection. Form DA 8-134, 1946 through 1955.
[6]Dumler, Raymond F., Meat and Dairy Technician, U.S. Army Medical Service: Personal communication.
[7]Egan, H. E.: Inspection and Transportation of Perishable Food Items by Air-Lift. Med. Bull. Med. Div. EUCOM, February, 1949.
[8]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, June, 1950.
[9]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, July, 1950.
[10]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, September, 1950.
[11]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, April, 1951.
[12]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, April, 1952.
[13]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, August, 1952.
[14]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, November, 1952.
[15]Essential Technical Medical Data Report, Headquarters, U.S. Army Europe, Medical Division, December, 1953.
[16]Goodwin, John M., Major, QMC: Operation Milk Run. The Quartermaster Review. (May-June, 1957): 28.
[17]Hartman, Jacob L.: Milk for EUCOM and U.S.F.A. Med. Bull. Medical Division, EUCOM (Jan., 1951): 41.
[18]Headquarters, QM Procurement Center, U.S. Army: QMPC Standards for Milk, Fresh, Fluid, Pasteurized. Specification M-1, July 1, 1951.
[19]Headquarters, QM Procurement Center, U.S. Army: "QMPC Specifications For Milk and Milk Products," QMPC-AO-412, March 15, 1954.
[20]Headquarters, QM Procurement Center, U.S. Army: Sampling, Inspection and Test Procedures (Specification No. M-1, as amended by amendment No. 1, eff. January 1, 1953). Jan. 1, 1953.
[21]Jimison, Robert L.: Dairy Products for the United States Personnel in Germany and Austria. J.A.V.M.A., (Jan., 1951):3-7.
[22]Medical Technician Memo. No. 7, Hq U.S. Army Europe, Med. Div., Feb. 8, 1954.
[23]Military Government Veterinary Report, Office of Military Government for Germany, U.S. Zone, April-June, 1947.
[24]Office of the Chief Surgeon (Veterinary Division), European Theater of Operations. Quart. Rep., April-June, 1946.
[25]Raulston, G. L., Major, VC, U.S. Army: Personal communication, May 29, 1957.
[26]Scothorn, M. W., Colonel, VC. U.S. Army: Personal communication.
[27]Van den Born, J. M.: The Dutch Five Years' Scheme for the Eradication of Bovine Tuberculosis.
[28]Veterinary Department, Fourth Field Med. Lab., U.S. Army: Standing Operating Procedure —Milk, Cream and other Fluid Dairy Products. Jan. 1, 1953.
[29]War Department, Washington, D. C.: Medical and Sanitary Data on France. War Dept. Tech. Bull., May 3, 1944.
[30]Young, James B., Major, VC, Army Medical Service Meat and Dairy Hygiene School, Chicago, Ill.: Personal communication, Sept. 26, 1956.

Povidone-Iodine, Topical Antiseptic

A new iodine complex (PVP-I) is a combination of polyvinylpyrrolidone, a water-soluble polymer, and iodine. It is soluble in water, does not stain the tissues as does iodine, yet has all the advantages of free iodine. Two thirds of the original iodine is still present as available iodine for microbicidal purposes, the other third is present essentially as an inorganic iodide ion.

This new iodine complex rarely irritates the skin, mucous membranes, or exposed tissues, and is less toxic than iodine. It marks the skin but this is easily removed by wiping. It is the preferred iodine preparation for topical use.—*Am. J. Surg. (Dec., 1957): 938.*

Buffalo Roundup in Kansas.—In November, a group of game officials, extension veterinarians, and others rounded up the state herd of 80 buffaloes so they could vaccinate the calves for brucellosis, examine them for parasites, and treat them for grubs with a new chemical. Because of poor nutrition, due to the drought of 1956, only 9 calves were raised from the 80 cows. —*Kansas Stockman (Dec., 1957): 3.*

The *A.I. Digest*, official publication of National Association of Artificial Breeders, published at Columbia, Mo., has inaugurated (Dec., 1957) "The Vet's Column," by Dr. John B. Herrick, Iowa State College, extension veterinarian.

Preventive Medicine Aspects of Flight Feeding and the Veterinarian

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THE UNITED STATES Air Force, like the other services, is concerned with the influence of nutrition upon work performance, accidents, and the general well-being of its people. For obvious reasons, particular interest is centered in the food needs of aircrews by the Air Force. This paper outlines the role of food during flight, as it relates to preventive medicine, and describes some recent flight-feeding research and development in which both army and air force veterinarians have taken part.

During flight, improper food intake, together with anxiety, fatigue, monotony, drowsiness, and discomfort, decreases flying safety and increases accident hazards. These physical and psychological stresses are aggravated by sudden change in barometric pressure, rapid temperature fluctuations, abnormal oxygen tension, turbulence, vibration, restrictive clothing and protective equipment, and cramped position.[3] Also, aircraft environmental conditions may affect the palatability of food and the desire for it, and create dietary dissatisfactions which adversely affect morale. On the other hand, appropriate food and fluids tend to relieve boredom, ease tension, soothe irritation, and counteract stress. Thus, food can enhance morale and increase flying safety, particularly on flights of extended duration.

FOOD AND LIQUIDS FOR AIRCREWS

Aircraft limitations of weight and space, restricted aircrew movement, and use of the oxygen mask make normal eating difficult and often permit only an inadequate food intake. Both mental and physical performance can be affected by the extent to which food intake meets nutritional requirements. Long periods between meals result in nervousness, irritability, and tension. Shortening the period between meals with reduction in their size is beneficial. This also prevents the feeling of drowsiness which follows the consumption of a large meal. Large meals are physically inconvenient for people who are forced to remain in restricted positions and in certain postures in order to maintain their aircrew duties.

In addition to food, fluid intake is an important factor in maintaining peak efficiency of aircrews. A water loss, from all avenues including sweating, of even 2 per cent of body weight can lower efficiency.[5] For high flight performance, fluid intake must, therefore, aim to approach water loss. In hot environments, men tend to dehydrate between meals. They may feel fatigued when their loss of energy is actually caused by dehydration. Most people drink the liquid they need at meal time or shortly thereafter. Thus, water balance is restored to normal or slightly higher. Highly acceptable fluids should be provided in readily accessible form. Drinks should be kept cold, beverages and soups should be hot, and the variety of items should be fairly large.

Food-borne infections and intoxications are always distressing and become particularly dangerous when they develop during flight. These can occur from the perishable components of meals eaten before and during flight. Prevention of food poisoning involves the suitability of the food as bacterial mediums, and time-temperature factors of bacterial growth prior to consumption; also the design, use, and cleanliness of food-servicing equipment. Since refrigeration is not available on many types of aircraft, the foods should be unfavorable mediums for bacteria.

FOIL-PACK MEAL SYSTEM

Recently, a new system of in-flight feeding, the foil-pack system,[4] has been developed and is now authorized for use in large aircraft where weight, space, and power are fairly ample. Air force veterinarians participated in this development from its inception, and army veterinarians participated in its testing and bacteriological evaluation. This feeding system provides meals which consist of five menu items in separate aluminum foil containers: meat, potatoes and another vegetable, a hot roll,

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Fig. 1—Photograph showing the foil-pack meal. Each food is placed in a separate aluminum foil container which is placed on the oven tray.

and a dessert (fig. 1). Except for the searing of meats and the partial cooking of certain foods, all items are packaged uncooked on the ground. Since these foods are good mediums for bacteria, meals are taken aloft in a refrigerator and cooked during flight in light-weight aircraft ovens (fig. 2).

During a field test, nearly 9,000 such meals were served. A bacteriological study of foil-pack meals showed little or no bacterial growth after 120 hours of storage at ordinary refrigerator temperatures. Under supervision of the veterinarian at the Oakland Army Laboratory, standard plate counts, coliform counts, and presumptive tests for food poisoning organisms were performed on meals which had been stored

Fig. 2—Foil-pack meals in place in aircraft oven.

24, 72, and 120 hours at ordinary refrigerator temperatures. The results, as evaluated by a microbiologist and by the author,

Fig. 3—Photograph showing the compact box lunch. Some of these may be kept as long as 20 hours after preparation.

indicate that foil-pack meals can be safely consumed up to five days after preparation when stored at ordinary refrigerator temperatures of 35 F.[1,6]

In the new high performance aircraft, facilities for eating are especially critical and at times unavailable. However, since the flyer should be refueled as adequately and as consistently as the aircraft, specialized foods and feeding techniques are needed.

DEVELOPMENTAL PROGRAM

A five-pronged developmental program is now in progress to develop foods capable of meeting the feeding needs of aircrews flying high performance aircraft. These foods must be bacteriologically safe without refrigeration, physiologically suitable for consumption during flight, highly acceptable when eaten cold, and readily consumable with one hand. The five prongs of the program seek liquid foods, food tablets, semisolid foods, a stable food packet, and a compact box lunch. The first four of these are in various stages of development, but the last, the compact box lunch, has been completed.

The compact lunch has six menus—three for consumption within five hours from the time of preparation and three for consumption up to 20 hours after preparation[2] (fig. 3). The foods used in these last three menus are not very good mediums for bacteria. Protection from dehydration at high altitude, compactness, bite-size components, and ease of eating are characteristics which maintain acceptability and increase the utility of this meal. The base veterinarians were active in guiding the tests and in observing results. The bite-size cubes of steak in two of the six menus, which add menu variety and enhance the acceptability of the lunch, was the idea of a base veterinarian. The author helped work out a method of pasteurizing the steak in a foil package to make it safe for consumption.

SUMMARY

The preventive medicine aspects of flight feeding are described. The foil-pack system for providing freshly cooked, hot meals to crews and passengers on patrol, transport, and cargo aircraft, and the compact box lunch for use in combat jet aircraft have been tested and approved during flight in suitable aircraft.

References

[1]Costilow, Ralph N., Taylor, Albert A., and Dyme, Harry C.: Bacteriological Study of the Foil Pack In-Flight Feeding System. Wright Air Development Center Technical Note 56-134, Wright-Patterson Air Force Base, Ohio, March, 1956.

[2]Finkelstein, Beatrice, Pippitt, Robert G., and Taylor, Albert A.: Evaluation of Improved Compact Box Lunch. Wright Air Development Center Technical Report 56-363, Wright-Patterson Air Force Base, Ohio, July, 1956.

[3]McFarland, Ross A.: Human Factors in Air Transportation: Occupational Health and Safety. McGraw Hill, New York, 1953.

[4]Mock, Ronald O., Taylor, Albert A., and Dyme, Harry C.: Field Test of Foil Pack In-Flight Feeding System. Wright Air Development Center Technical Report 55-400, Wright-Patterson Air Force Base, Ohio, October, 1955.

[5]Pond, Alonzo W.: Afoot in the Desert. ADTIC Publication No. D-100, Arctic Desert Tropic Information Center. Maxwell Air Force Base, Alabama, March, 1951.

[6]Taylor, Albert A., and Costilow, Ralph N.: Bacteriological Study of Foil Pack In-Flight Meals During Refrigerated Storage. Wright Air Development Center Technical Note 57-73, Wright-Patterson Air Force Base, Ohio, March, 1957.

Hemorrhagic Syndrome in Chickens

This syndrome was first reported in Great Britain in 1951 and its incidence has gradually increased, but not to the extent that it has in America. It constituted about half of 1 per cent of all flock disease problems investigated in the past year. The mortality ranged from 1 to 50 per cent, and averaged 10 per cent. It was uncommon in light breeds and usually affected chickens 7 to 12 weeks of age but some were up to 10 months old.

Of 32 flocks investigated, 27 had recently been given sulfonamide drugs in the drinking water and the other five flocks had been given a mash containing some other coccidiostatic drug. However, in view of the widespread use of coccidiostats, the syndrome is comparatively rare; it has not been found in turkeys.

The experimental feeding of sulfonamide drugs resulted in a depression of the production of erythrocytes and granulocytes which was reversible 48 hours after treatment was stopped. The prothrombin time was only slightly increased and deaths occurred only when other stress factors were applied. Even excessive quantities of sulfonamides alone produced no deaths.—*World's Poult. Sci. J. (Oct.-Dec., 1957): 310.*

The Need for Sanitation in Poultry Processing

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THE POULTRY industry has doubled in size since 1940.[1] The annual per capita consumption of poultry meat is now nearly 35 lb. This is partially attributable to revolutionary changes in the methods of processing and marketing poultry. Formerly, live birds were shipped to the terminal markets for slaughter; they are now processed near the areas of production. Such poultry, moving in interstate commerce, will be inspected for wholesomeness by national legislation when it is enacted. However, there is a segment of the industry which will not be affected by national legislation, but over which controls are needed—that is the local poultry slaughterhouses found on the side streets of the business district of almost every city.

In some areas, due to the difference in labor costs, locally dressed poultry represents a large percentage of the total retail sales. Not being burdened with the extra costs of producing a brand name quality product and with lower labor costs and often operating with little if any sanitary supervision, the local processor has an economic advantage over the national distributor. This has fostered the development of insanitary food handling practices in processing poultry.

The housewife assumes that the food offered at the market is clean. Fortunately, that is the case with most products, excluding locally dressed poultry.

In poultry plants which receive only cursory attention from health officials, the sanitation standards are determined, not by the size of the operation, but by the operator's sense of moral responsibility and his desire to produce a quality food product. The conditions in plants where the operator has no sense of obligation to produce a clean product can only be described as atrocious (fig. 1). The equipment often is inadequate and heavily soiled with fecal material. The evisceration of poultry on worn wooden cutting boards is a filthy practice that assures soiling of every product placed on such a surface.

In small plants, not equipped with chain conveyors, the use of bleeding cones is a more desirable procedure than tossing the birds on the floor or in an oil drum to bleed out. Stainless steel cones (fig. 2), initially more expensive to install, are ideal for this purpose, are easy to maintain, and do not rust. Galvanized steel cones are satisfactory but are harder to clean and require more frequent replacement.

The scalding equipment used in small plants ranges from a pot of boiling water on a gas stove to fully automatic, thermostatically controlled devices (fig. 3). Scalding tanks should have overflow and automatic filling facilities. At least one pint of water should be added for each bird processed and, where the feathers are heavily soiled, the amount should be increased.

The defeathering procedure is one in which there is a wide variety of methods, ranging from hand picking to automatic defeathering machines (fig. 4). An excellent type of equipment for small operations is a centrifugal unit which will handle 3 to 5 birds at a time. This type of defeatherer contains an inner cylinder which is lined with rubber "fingers" and rotates on a vertical axis. Water is sprayed into the drum during operation, thereby washing away the feathers as they are removed. At the end of the defeather cycle, which requires only a few seconds, the birds are automatically tossed from the defeatherer into a vat of clean water. Another type of device, widely used by small operators, is the rotary drum defeatherer or "ruffing" machine (fig. 5). This is not automatic and requires that each bird be held against the revolving drum which is covered with rubber "fingers." It is not easily cleaned and, when in use, tosses feathers on the adjacent floor and wall surfaces.

In addition to the local slaughter of poultry which certainly needs health department supervision, the practice of killing and defeathering birds and then shipping them several hundreds of miles before they are eviscerated (so-called

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Presented before the General Session, Ninety-Fourth Annual Meeting, American Veterinary Medical Association, Cleveland, Ohio, Aug. 19-22, 1957.

Fig. 1—A dirty poultry dressing plant.

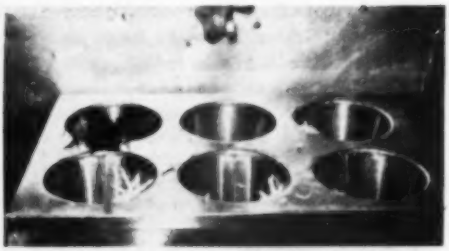

Fig. 2—Stainless steel bleeding cones.

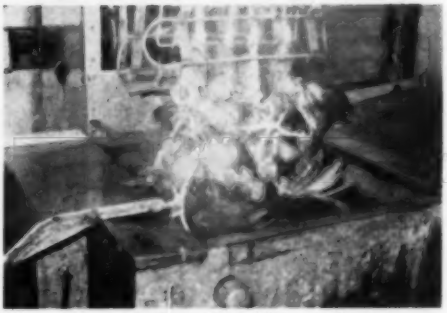

Fig. 3—Automatic scalding machine.

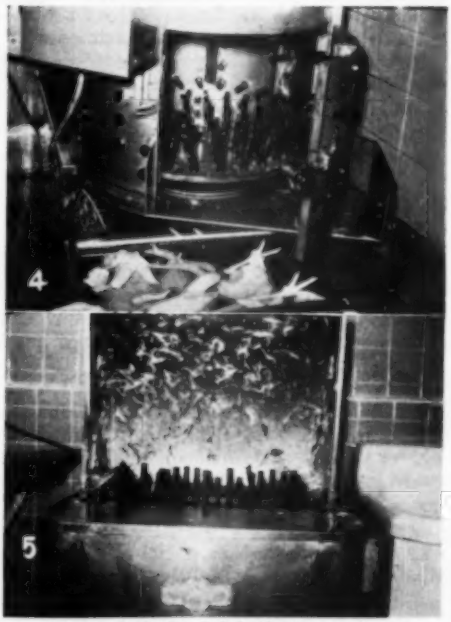

Fig. 4—Centrifugal defeathering machine.
Fig. 5—Rotary type defeatherer.

"New York-dressed") is one that should not be condoned. In 1946 Gunderson[1] stated, "There is as little reason for marketing New York-dressed poultry as there is for marketing hogs and cattle with the viscera intact."

An industry of considerable size has developed in connection with the receipt of New York-dressed poultry in terminal markets—that of wholesale eviscerators. Poultry is slaughtered and defeathered in or near the centers of production; then shipped either frozen or packed in crushed ice to the market areas. The interval between slaughter and evisceration is not determined by the distance the product must travel, but rather by the market demand for this type of poultry. Uneviscerated poultry may be stored for as long as one year. In the market area, the birds are eviscerated and distributed to the trade as "fresh eviscerated" poultry.

The cold evisceration of poultry is not a satisfactory method of preparing a quality food product. The intestines of such birds become readily permeable following slaughter, releasing odorous gases, bacteria, and other materials. Thus, on extended holding, an obnoxious odor develops in the flesh of the abdominal wall and adjacent tissues of the thighs.[2]

The speed with which New York-dressed poultry is eviscerated, and some of the practices followed during these procedures, tend to assure the contamination of most of the poultry so processed. In order to thaw frozen poultry, it is sometimes placed in a large vat of water which, in a few hours, shows gross evidence of fecal pollution. The processing of incompletely thawed carcasses and the speed of the conveyor chain often result in broken intes-

tines. Few of these operators remove the kidneys and testes from the birds and the removal of the lungs is not always complete.

Insanitary food handling practices also occur in retail food stores where New York-dressed poultry is eviscerated. Permitting the evisceration of poultry to be done on a wooden butcher block, which

Fig. 6—Cutting chicken on butcher block.

may later be used for cutting cooked meats (luncheon meat, salami, etc.) is a gross violation of the basic tenets of food sanitation. Seldom are the meat departments of the food stores of adequate size to permit the evisceration of poultry to be conducted as a separate operation, apart from the cutting and preparing of red meats. The stores that I have visited did not have facilities in the meat-cutting department to wash poultry or the equipment used during such dressing operations. Utilizing the limited space available in most stores, the result is that the butcher block has become the eviscerating table and often the butcher's apron substitutes for the thorough washing the product should have received (fig. 6).

Once having seen poultry dressed on a butcher block, it is not difficult to visualize how cases of diarrhea may be attributed to eating precooked luncheon meats, which could have been contaminated with poultry fecal bacteria.

During the past two years, several articles have appeared in national magazines describing practices in the processing of poultry and pointing out the need for federal legislation to correct the deficiencies and control this industry. The fact that such legislation is now being considered should stimulate local health agencies to (*a*) provide training for poultry slaughterhouse workers in food handling techniques, similar to that provided for restaurant personnel, (*b*) supervise the "cold" evisceration of poultry and require that it be done in a sanitary manner, if such practices are still permitted under local ordinances, and (*c*) prohibit the evisceration of poultry in retail meat stores.

References

[1]Atkinson, J. W.: Development of a Poultry Ordinance. Pub. Health Rep., *71*, (May, 1956): 471-476.

[2]Atkinson, J. W.: "New York-Dressed" Poultry. Mod. Sanitation, *8*, May, 1956.

[3]Gunderson, M. F.: Do the Job Right When You're Eviscerating Poultry. U.S. Egg and Poult. Mag., July, 1946.

Trends in Poultry Hygiene.—The poultry industry, which has doubled in size since 1940 to become the third largest source of farm income, is improving its hygiene. Improved sanitary facilities, refrigeration methods, and operating procedures are being developed, along with new methods for prolonging the storage life of poultry products. The sale of New York-dressed (uneviscerated) poultry is decreasing, and official regulatory programs by federal, state, and local authorities are increasing.—*J. W. Atkinson in Pub. Health Rep. (Nov., 1957): 949.*

A 1,134-lb. Litter of Pigs at 8 Weeks.—A world's record litter of 18 pigs was raised, in England, from an Essex sow and a Large White boar, the pigs averaging 83 lb. at 56 days.

For the first few days, the pigs were allowed to nurse by alternate groups of 9 but, in 24 hours, they were starting to drink sow's milk substitute. After eight days, 9 of the pigs were placed on a foster mother also. The pigs were given iron capsules when 3 days old, and injections of iron compound when 8 days old.—*Breeder's Gaz. (Jan., 1958): 19.*

Puerto Rico Declared Brucellosis-Free.—The U. S. Department of Agriculture announced, in December, that it had officially declared Puerto Rico as being modified-certified brucellosis-free. It joins the nine states so classified.—*U.S.D.A., Dec. 9, 1957.*

A Radically Different Method for Repairing Distal Radial-Ulnar Fractures in the Dog

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FRACTURES of the distal fourth or fifth of the radius and ulna in large dogs present special problems in repair. This is particularly true in those mature males who chew constantly on any appliance, cast, splint, or externally placed pins.

On Aug. 17, 1957, a 58-lb. male Weimaraner, 2 years old, with a nonunion of the distal fifth of the right radius and ulna was referred to our hospital by a colleague from a neighboring city. The dual fracture was the result of an automobile accident three weeks previously.

The history of the previous treatment was as follows: Three days following the injury and the subsiding of initial swelling, the leg was cast, using an external splint. In 24 hours, the dog had chewed off half of the cast. Two days later, another cast was applied and it remained in place for four to five days before again being chewed off. The cast was not replaced since the radius appeared to be in apposition. However, by walking on the broken leg, a false joint developed, the leg bending laterally at a 45-degree angle.

Under light pentothal anesthesia, radiographs (fig. 1) of the leg were taken. The prognosis for a normal gait on the fractured leg was poor.

Using standard preoperative procedures, and Nembutal as an anesthetic, a 3-inch incision was made laterally between the false joint of the radius and the nonunited ulna. Due to the proximity of the carpal joint and ligaments, as well as the scar tissue produced around the false joint, the lateral movement of the proximal portion of the radius was limited to less than ½ inch, making it impossible to insert a Jonas splint or a modified small intramedullary pin.

Fig. 1—Radiograph of the radius and ulna of a dog, taken three weeks after fracture (8-17-57).

Fig. 2—Radiograph taken with modified pin in position (8-19-56).

SURGICAL PROCEDURE

The fractured ends of both bones were, therefore, freshened through the incision to insure union. A No. 4, 0.3-cm. Kirschner threaded intramedullary pin sharpened on both ends was used. The nonthreaded end was passed through the incision into the medullary cavity of the proximal radial fragment, then upward at a 45-degree angle and worked through the cortex and periosteum to emerge at the medial side of the proximal portion of the radius (fig. 2).

A small incision was made through the skin to permit the pin to be drawn upward until it would clear the distal portion of the radius. The threaded (distal) portion of the pin, which had been bent at a 10-degree angle before insertion, was then wedged by force into the medullary cavity against the lateral wall of the distal fragment of the radius. The pin was well anchored and then the exposed portion was cut off as close to the periosteum of the radius as possible. The lateral incision was closed with interrupted sutures and the small medial incision with one suture.

A Kirschner-Thomas splint was applied

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Fig. 3—Radiograph of the radius and ulna of a dog, taken 46 days after pinning (10-4-57)—two views. The pin was later removed.

for extra protection, radiographs were taken (fig. 2), and 600,000 units of aqueous procaine penicillin was given intramuscularly. To keep the dog contented and to prevent chewing on the external splint, 800 mg. of meprobamate and 3 gr. of seconal were given orally every eight hours. The dog was returned to the referring veterinarian for hospitalization for two weeks. The external splint was then removed and the dog was sent home where it was given a vitamin-mineral compound daily for six weeks.

RESULTS

When the skin sutures were removed on the seventh day, a radiograph showed evidence of bony callous formation. The dog was returned 46 days after surgery for re-examination. He was using the leg normally and, contrary to instructions, had been taken hunting. The owner wanted the pin removed because of a small swelling, ½ inch in height, on the medial aspect of the radius where the head of the pin had been buried. Under pentothal anesthesia, a radiograph was taken, showing an excellent callous formation (fig. 3), and the pin was removed.

CONCLUSIONS

Contrary to popular belief, it is possible to place a short intramedullary pin diagonally through a difficult type fracture and to immobilize it without damage to the bone or surrounding tissues. Fractures of the lower fourth of the radius and ulna, and also of the tibia, lend themselves especially well to this procedure. Routine types of fracture repair are not always satisfactory in large male dogs that resent external fixation, particularly such breeds as German Shepherds, Doberman Pinschers, and Weimaraners.

Vaginal Prolapse in the Cow.—Vaginal prolapse in cows has usually been treated surgically, with limited success. It occurs in nonpregnant cows, often preceding estrus, but more frequently in cows after four months of pregnancy and chiefly during the last few weeks of gestation.

Attempts to produce lactation in virgin heifers by implantation of estrogenic tablets sometimes resulted in nymphomania and, occasionally, in prolapse of the rectum and the vagina, thus indicating an endocrine influence.

When 19 affected cows were treated with average doses of folliculin, in the form of dehydrofolliculin benzoate Roussel, results were successful in 16, unsuccessful in 3. In several of those which responded, there was a slight tendency to relapse. Where the exposed organs were inflamed or excoriated, pessaries were indispensable.—*M. Bardoulat in Rev. de méd. vét. (June, 1957): 367.*

Open Method of Skin Grafting.—In the "open method" of grafting, no bandages and, usually, no sutures are used. This is physiologically correct as it depends upon the intrinsic inherent forces of the fibrin clot. Pressure bandages are not necessary and, in some areas, are dangerous. Small blood clots beneath the graft do not affect the "take."—*Am. J. Surg. (Dec., 1957): 869.*

A Technique of Repair of Multiple Mandibular Fractures in a Dog

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On Feb. 22, 1957, a female border Collie, 8 years old, had her mandible fractured (fig. 1) by an automobile. Examination revealed a simple, complete, transverse fracture in the right half of the mandible between the canine and first premolar teeth; and, in the left half, a complete, transverse fracture between the first and second molars; also a partial, comminuted fracture between the fourth premolar and first molar.

Under anesthesia, the mandible was repaired by placing stainless steel wire through holes drilled in the mandible on either side of each fracture, then tightening the wires by twisting. The right side held nicely with wire, but neither the wire nor two attempts with a Kirschner splint successfully immobilized the left side.

An impression cast was then made of the left mandible with a dental impression powder (Jeltrate*). It was mixed with water and the resulting paste was put in a metal tray and held in place over the fracture site for two minutes until it solidified. The dog was not anesthetized to make the impression. From this impression, a splint was made, by a dental technician, as follows: A cast was made of the impression obtained (fig. 2a), then was sawed apart and put back together as closely as possible to simulate the normal position of the mandible. An impression was made from this

Fig. 1—Fracture of both sides of the mandible in a Collie. Notice the malalignment.

and, in turn, a cast was made of this impression (fig. 2b). The resulting cast was then used to make an acrylic splint (fig. 2c) which would extend down on either side of the mandible, nearly to the point of buccal and lingual lines of flexion, and ex-

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The authors thank Dr. Richard Rudy, Ohio State University, for his assistance.

*Produced by L. D. Caulk Co., Milford, Del.

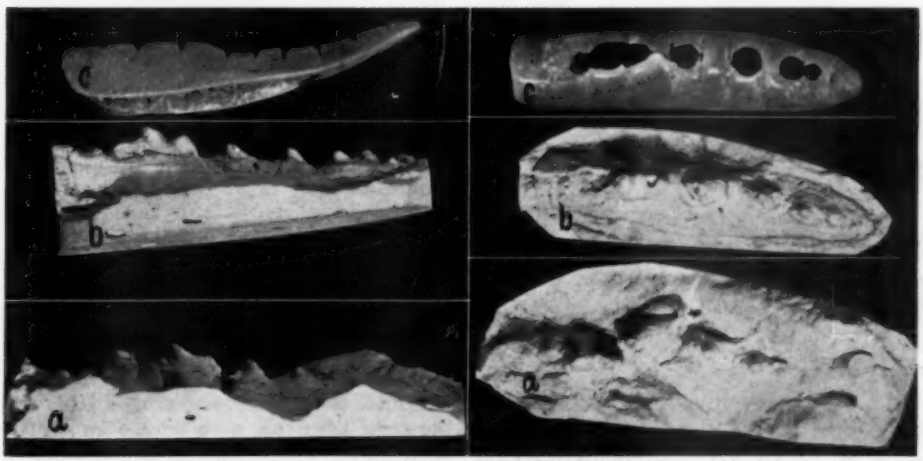

Fig. 2—Casts made from the impression of the nonunited left half of the mandible (a); simulating the jaw as normally aligned (b); and the splint (c).

Fig. 3—The splint in place.

tend along the mandible from the canine tooth to and over the second molar. There were transverse grooves in the splint to accommodate the wires used to fix the splint in place.

The dog was anesthetized and a heavy, curved cutting suture needle, threaded with No. 30-gauge stainless steel wire, was passed from the lingual surface of the mandible through the soft tissue, out through the skin, and back through the skin and soft tissue on the labial surface of the mandible. This was done in three places—two strands being placed anterior and one posterior to the fracture. The fracture was then reduced and the splint put in place. There were openings in the splint to admit the occlusive surfaces of the teeth.

Fig. 4—The left side of the mouth after the splint was removed.

The wires were then tightened by twisting until the mandible was immobilized in the correct position (fig. 3). The dog was taken home and was able to eat normally during the convalescent period. Antibiotics were used to control infection. Three weeks after surgery, a radiograph showed good callous formation. At four weeks, the wires and the splint were removed. Good alignment of the mandible on both sides was achieved (fig. 4) and the dog could use the jaw normally.

This plastic splint technique has been used successfully in repairing difficult fractures of the mandible in man. The procedure described has the advantage of being inexpensive, quickly and easily applied, well tolerated by the animal, and it provides maximum fixation with a minimum invasion of the fracture area.

Ovine Obstetrics.—A simple, quick method for the delivery of lambs, when the cervix does not dilate at parturition, is described by a correspondent. He inserts a finger into the cervix and completely everts the vagina by gentle traction. He then incises the cervix and a small portion of the vagina and uterus (longitudinally in the dorsal portion) with straight scissors and delivers the lamb(s).

If the fetal membranes can not be freed otherwise, he everts the uterus, removes them manually, then replaces the uterus, sutures the incision, and replaces the vagina. He states that this can be done without an anesthetic since it causes little discomfort; results were usually good.—*New Zealand Vet. J. (Sept., 1957): 114.*

Insemination of Hogs.—While many practical problems remain, at the Ohio Experiment Station, under laboratory conditions, first-service conceptions in sows have ranged as high as 80 per cent, compared with the 70 per cent average for most dairy inseminators. Methods of dilution and of storage are two big problems.

Recently, boar semen flown from Norway to Beltsville, Md., was used on 24 sows, within 30 to 40 hours after collection, and 11 farrowed litters averaging 9.2 pigs each. Combined with the use of hormones to stimulate estrus, research men visualize the time when all sows on a farm could be brought in heat the day of the inseminator's visit.—*Farm J. (Jan., 1958): 42.*

Intraperitoneal Insemination of a Heifer

Anatomically, the ovarian bursa in the bitch, rat, and mouse could prevent intraperitoneal fertilization, but there is no barrier to prevent semen from reaching the ovum in the cow, ewe, mare, rabbit and, to some extent, the sow. Intraperitoneal insemination has been reported in a chicken, and also in a heifer when the semen was injected through the vaginal wall.

At the University of Illinois, 4 heifers were inseminated (2 of them twice) near the end of estrus by injecting semen, diluted or undiluted, through the abdominal wall at the right paralumbar fossa with a 16-gauge, 4-inch hypodermic needle. Three of the heifers were simultaneously injected with anterior pituitary extract. One heifer became pregnant and the gestation period was 275 days.—*L. E. McDonald and J. Sampson in Proc. Soc. Exptl. Biol. and Med. (1957): 815.*

Placental Transmission of Poliomyelitis Antibodies.—Six women were given Salk vaccine during pregnancy while, as controls, eight pregnant women were left unvaccinated and six nonpregnant women were vaccinated. Vaccination had no apparent deleterious effect on pregnancy, and antibody production did not differ from that in nonpregnant women. The maternal antibodies were transferred through the placenta, probably by a process of selective permeability.—*J.Am.M.A. (Nov. 30, 1957): 1748.*

Uterine Rupture Following Cesarotomy.—Uterine ruptures have occurred in women who have had cesarean sections. In one report, the incidence was 2.1 per cent—1.0 per cent during pregnancy, and 1.1 per cent during labor.—*J.Am.M.A. (Oct. 12, 1957): 766.*

Emasculatome Trauma of the Penis.—A calf, 10 weeks old, with a swelling from the prepuce to the ischial arch was found, at necropsy, to have two areas of trauma on the penis, midway between the sigmoid flexure and the gland, the result of careless use of an emasculatome. A urethrotomy had been performed just posterior to the scrotum but, from that low position, catheterizing had not been possible. Death was due to uremic poisoning.—*Auburn Vet. (Spring, 1957): 242.*

Correction—Patellectomy and Variation of Paatsama's Operation on a Dog

In the article, "Patellectomy and a Variation of Paatsama's Operation on the Anterior Cruciate Ligament of a Dog," by R. Gibbens in the Dec. 15, 1957, JOURNAL (p. 557), the artist's sketch did not show how the skin transplant, which replaced the torn anterior cruciate ligament, passed through the tunnels drilled through the femur and tibia. Also, the legend failed to identify parts labeled in the sketch.

The corrected sketch and legend are shown below.

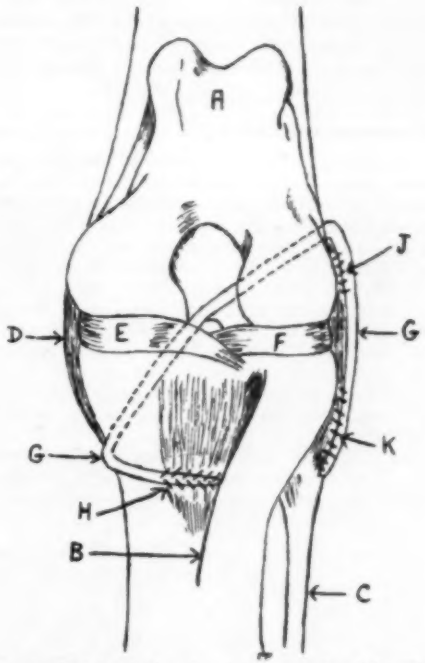

Fig. 1—Sketch of the dorsal view of the left stifle joint of the dog, showing the position of the thong of skin (G) which replaced the torn ligament. Also shown are the trochlea of the femur (A) for articulation with the patella; crest of the tibia (B); fibula (C); medial collateral ligament (D); medial meniscus (E); lateral meniscus (F); thong made of skin (G); and end of thong (H) sutured to the insertion of the patellar ligament. The other end of the thong is sutured to the lateral collateral ligament above (J) and below (K) the level of the joint.

Clinical Data

Pathological Changes Associated with the Lowland Abortion Syndrome in Wisconsin

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Madison, Wisconsin

THE HISTORY, prevalence, and possible cause of a bizarre abortion problem in both beef and dairy cattle grazing on unimproved, lowland pastures during the past 50 years have been described.[3] Over 400 abortions were reported in one county during 1954. Investigations revealed that: (1) The highest number of abortions occurred during the May-June period and again during September; (2) the cattle had eaten a number of species of weeds; and (3) no single poisonous plant appeared to be responsible. Many abortions went unnoticed because the health of the cows appeared unaffected except for the abortions. Infectious agents could not be demonstrated from the aborted fetuses or lochia.

MATERIALS AND METHODS

"A grazing study was conducted during 1956 on an unimproved lowland pasture having a known history of abortions and containing a large number of weeds. Two grazing areas were established in this pasture. They were treated as follows: area A—fertilized with 500 lb. of 10-10-10* per acre, sprayed with 2,4-D, and sprayed a second time with a mixture of 2,4-D and 2,4,5-T; area B—no treatment. Each of these was stocked with 8 pregnant heifers on May 22. Another weedy pasture was stocked with 4 pregnant heifers in July. Thus, 12 heifers were grazing on two weedy, untreated areas, and 8 heifers were grazing on the treated area."[3]

Once a week, each heifer was examined, per rectum, to determine the status of her pregnancy, and a blood sample was taken for methemaglobin determination.

From the Department of Veterinary Science (Simon and Winter), and the Department of Agronomy (Sund and Wright), University of Wisconsin, Madison; Dr. Douglas is a practitioner in Stevens Point, Wis.

Published with the approval of the director of the Wisconsin Agricultural Experiment Station as paper 240, from the Department of Veterinary Science, University of Wisconsin, Madison.

Supported in part by the Buena Vista Research Association, Bancroft, Wis.

The authors acknowledge the assistance of the following: Mr. A. Brown, Professor F. V. Burcalow, Dr. C. W. Burch, Mr. V. Dary, Dr. S. H. McNutt, Mr. H. Montague, Dr. R. E. Nichols, and Dr. L. Wipf.

*10-10-10=percentage analysis of commercial fertilizer having 10 per cent nitrogen, 10 per cent phosphorous pentoxide, and 10 per cent potassium dioxide.

RESULTS

Ten of the 12 heifers on the untreated areas aborted, while only 1 of the 8 heifers on the treated (no weeds) area aborted. The heifer that aborted on the treated area may have eaten some weeds, prior to the second spraying, or stems of goldenrod which had been killed with a mixture of 2,4-D and 2,4,5-T. After the second spraying, a considerable number of stems of goldenrod were grazed. A large number of several kinds of weeds were eaten on the untreated areas. The animals that aborted showed no clinical signs of impending abortion such as mammary gland distention, loosening of the sacrosciatic ligaments, vaginal discharge, or uneasiness. The prevalence of retained fetal membranes in the aborting animals was low. They later came in heat at regular intervals and conceived at a normal rate.

The physical appearance of some of the fetuses indicated that they had been dead *in utero* for some time. The significant gross and histological tissue changes found in 10 aborted fetuses, eight fetal membranes, and 2 cows that were killed are reported here. The age of the aborted fetuses ranged from 3 months to nearly full term.

PATHOLOGICAL CHANGES

Gross Pathology of the Fetuses.—The thoracic and peritoneal cavities contained serosanguineous fluid in volumes from approximately 100 ml. to a liter.

Heart.—Two of eight fetal hearts contained petechial to suffusion-type hemorrhages in the subepicardial region of the auricles, with a serosanguineous transudate in the pericardial cavity. The hearts of all fetuses appeared degenerated.

Lungs.—There were bilateral pleural thickenings of the posterior lobes of the lungs.

Liver.—Marked degenerative and necrotic foci were observed throughout the parenchyma.

Spleen.—The splenic pulp was necrotic.

Kidney.—A heavy transudation of serosanguineous fluid was found in the perirenal fat of all fetuses. The kidneys were congested and appeared necrosed to a far greater degree than the liver.

Histopathology of the Fetuses.—Heart.—Focal degenerative changes, hyalinization of muscle bundles, and muscular displacement were observed in the myocardium (fig. 1).

Lungs.—The atelectatic lungs contained an extensive interlobar edema with fibrin. Many of the

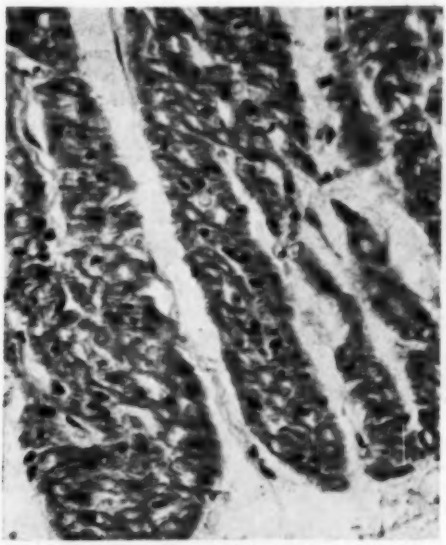


Fig. 1—Tissue from the fetal heart of a calf showing myocardial degenerative changes. x 350.

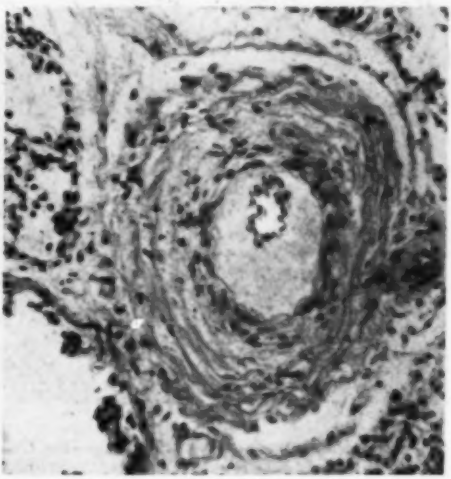


Fig. 2—Fetal lung of a calf showing thickened arteriolar wall with periarteriolar edema. x 235.

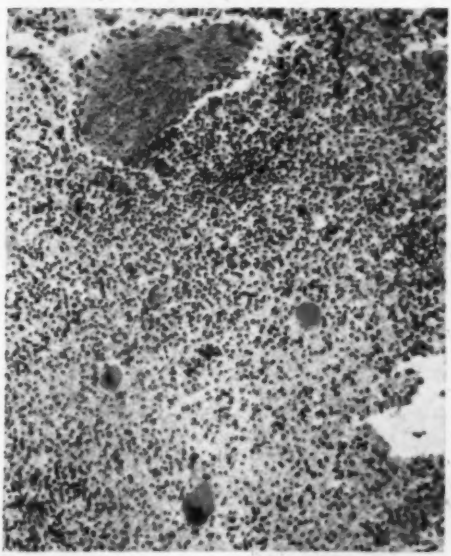


Fig. 3—Fetal spleen of a calf showing considerable congestion with a diminution of white pulp. x 280.

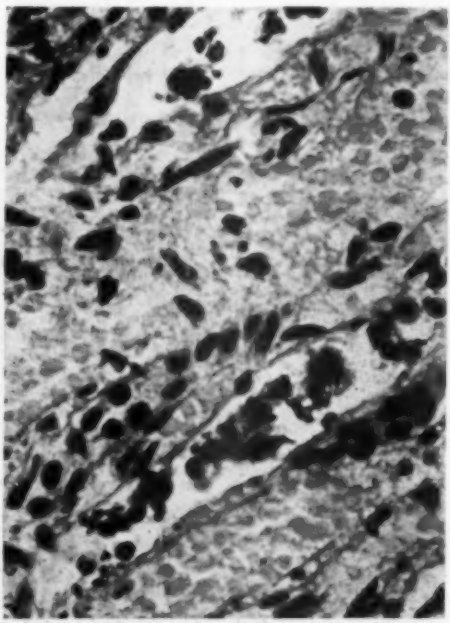


Fig. 4—Fetal kidney of calf showing area of lower nephron with extensive tubular hemorrhages. x 560.

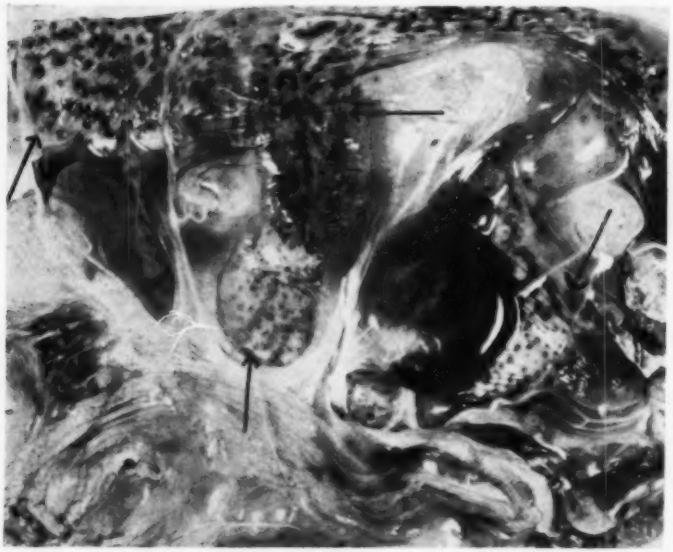


Fig. 5—Fetal membrane from a heifer which aborted on lowland pasture. Changes include calcified, intercotyledonary necrotic foci (arrows) and edema.

arteriolar walls were thickened (fig. 2). The pleural thickenings were characterized primarily by a heavy subpleural edema with a fibrinous deposition.

Liver.—In many of the livers there was a focal to generalized necrosis in addition to degenerative changes.

Spleen.—The white pulp was diminished considerably (fig. 3). Heavy edema was observed in the subcapsular region.

Kidney.—Extensive tubular hemorrhage was evident in the lower nephron (fig. 4). The glomeruli were congested and cellular; the vessels were distended, and the kidney in general was degenerative.

Pathology of the Fetal Membranes.—Only eight membranes of the 10 aborted fetuses were available for examination. They were edematous but, perhaps, most characteristic were the intercotyledonary circumscribed, necrotic, calcified poxlike

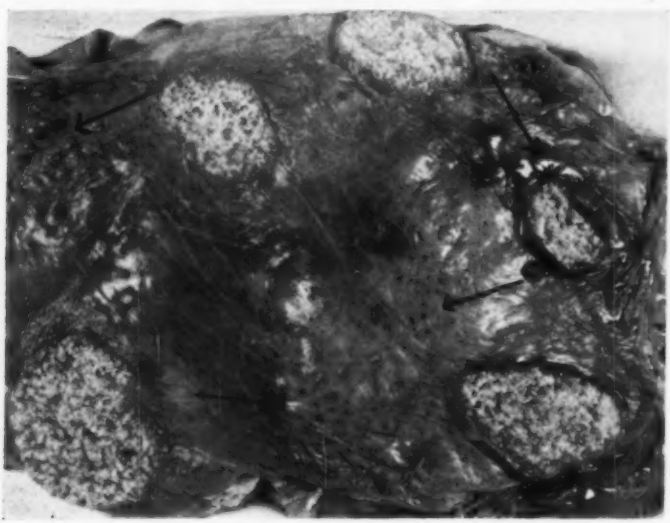
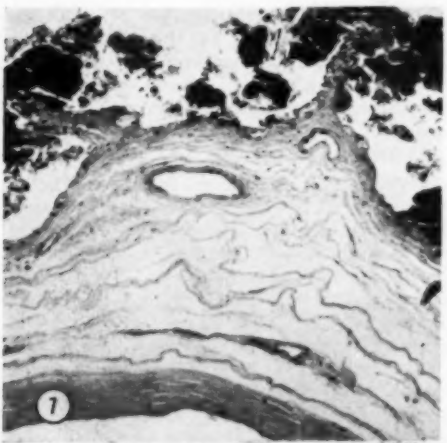


Fig. 6—Fetal membrane of a heifer that aborted while grazing on lowland pasture, showing necrotic foci (arrows), edema, and necrotic caruncles.



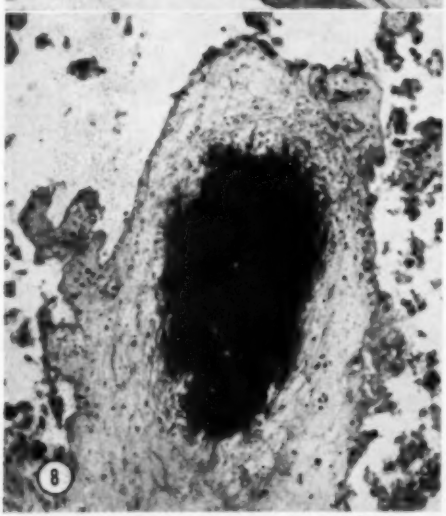


Fig. 7—Calcified plaques on periphery of fetal membrane of heifer that aborted. x 120.

Fig. 8—Calcified plaque within villus on fetal membrane of heifer that aborted in lowland pasture. x 120.

foci, 1 to 2 cm. in diameter (fig. 5, 6). This latter change has not been observed by the authors in abortions attributable to infectious agents, except the slight calcification found occasionally in *Trichomonas foetus* infection.

Microscopically, the circumscribed necrotic foci contained a heavy deposition of calcium (fig. 7, 8). Many of the vessels were either congested, thrombosed, or thickened.

Gross Pathology of the 2 Pregnant Cows.—The significant gross changes were limited to the uteri and lungs.

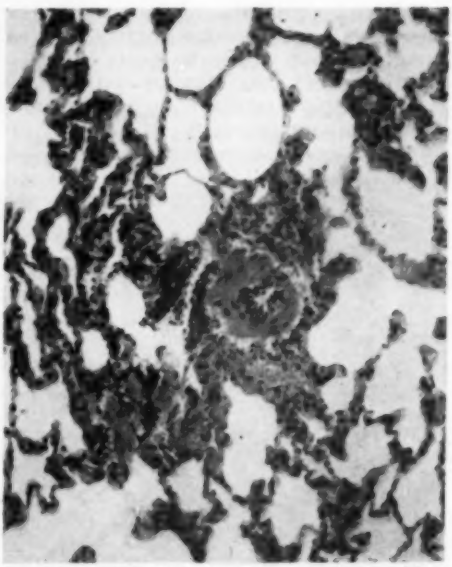


Fig. 9—Arteriole of the lung of a cow that was killed after grazing on lowland pasture. Calf was dead and would have been aborted. Arteriole is thickened with circumscribed edema. x 135.

The two uteri contained a thick, dark red fluid, pastelike in consistency, with blood debris, a dead fetus in each, and fetal membranes as described previously. The lungs of both cows were characterized by thickenings of the pleura of the posterior lobes.

Histopathology.—The arterioles of the lungs were thickened (fig. 9), hyalinized (fig. 10), many were essentially occluded (fig. 11), and some manifested an endoarteritis (fig. 12). When specially stained,[2] the arteriolar thickenings were seen to be the result of hyperplasia of smooth muscle in some cases and hypertrophy in others. The alveolar walls of the terminal bronchioles were hyalinized, flattened, and fanlike in appearance (fig. 13). Interstitial thickening was evident. The pleural thickening consisted of edema, fibrin, and connective tissue interspersed with a considerable infiltrate of eosinophils.

DISCUSSION

Although the cause of lowland abortion is unknown, it has been hypothesized that nitrates or nitrites may be involved.[3] It is known that nitrates are concentrated in the tissues of some weeds growing on soils

with high available nitrogen and low phosphorus and potassium content. Studies reported from South Dakota[4] and Missouri[1] suggest that abortion without impending clinical signs may be a feature of excessive nitrate intake.

A number of factors remain unexplained. No significant concentration of methemoglobin was present in the blood of any cows tested but blood samples were taken only once a week. Small variations in methemoglobin, however, may indicate that various amounts of nitrate were being ingested from time to time. The data sug-

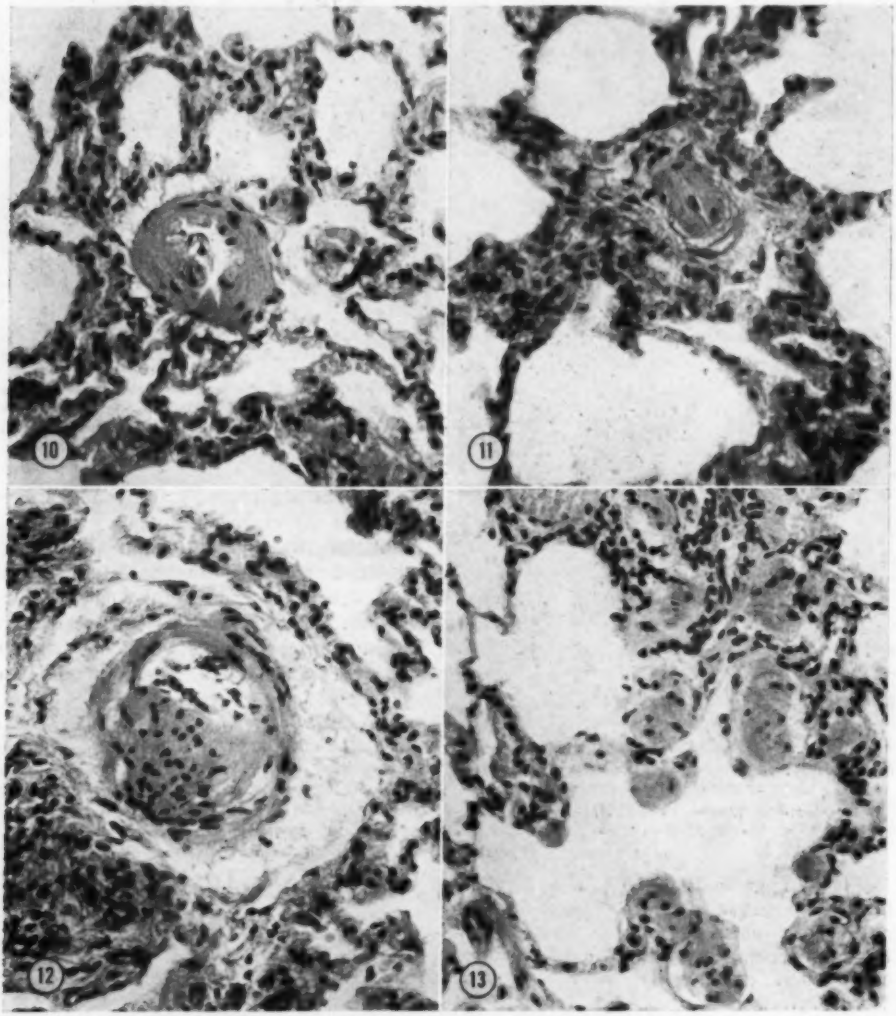


Fig. 10—Hyalinized arteriole from the lung of a cow which aborted on lowland pasture. x 280.

Fig. 11—Arteriole of the lung of a cow that aborted on lowland pasture is almost occluded. x 280.

Fig. 12—Intimal thickening, round cell infiltration, and peripheral edema in arteriole of the lung from a cow that aborted on lowland pasture. x 280.

Fig. 13—Wall terminal bronchioles and some alveoli showing a hyalinized, flattened, fanlike structure —from lung of a cow that aborted on lowland pasture. x 350.

gest that ingestion of nitrates was relatively low since none of the aborting cows, with one possible exception, was clinically ill.

The flora (weeds especially) varied among different lowland pastures; often one group of weeds was present in one pasture and not in the others. However, several of the species most commonly found contained appreciable amounts of nitrates. Similarly, the soils on a large number of lowland pastures investigated were high in available nitrogen and low in available phosphorus and potassium. The levels of minor elements in these soils have not been fully established.

It has been indicated[1] that an inverse relationship exists between the level of vitamin A and nitrate intake, and that the effect of the nitrate intake can be decreased by an increase of carbohydrate in the diet. It is known that on some Wisconsin lowland areas the hay crops are nutritionally mediocre to poor, with a relatively low vitamin A content.

All the pathological changes observed, including the abortion, could be attributed to anoxia. To speculate further, the formation of methemoglobin from hemoglobin, by the presence of nitrogenous compounds, could be the cause of the anoxemia. Transient increases in the level of methemoglobin in the blood may have occurred between samplings; it is also possible that nitrosohemoglobin was involved.

It must likewise be emphasized that failure to isolate an infectious agent does not preclude the possibility that one is involved in this bizarre problem.

Pasture improvement programs, or merely fencing these troublesome lowland areas so that pregnant cattle can not graze them, offer practical controls of this problem although the etiological factors are still obscure.

SUMMARY

A nonspecific abortion in both beef and dairy cattle grazing on lowland pasture areas in Wisconsin has been observed for half a century. A grazing study was conducted during 1956. Abortion occurred in 1 of 8 heifers on the sprayed area and in 10 of 12 on the unsprayed (weedy) area.

The characteristic pathological changes include: perirenal hemorrhage and marked kidney degeneration in the fetus; numerous circumscribed, calcified, necrotic lesions in the intercotyledonary areas of the fetal membrane; and pleural thickening and vascular changes of the lungs of the dam and aborted fetuses.

It is hypothesized that plants with a high concentration of nitrates, or nitrites, may be associated with this problem, though tangible evidence has not yet been produced.

References

[1]Case, A. C.: Some Aspects of Nitrate Intoxication in Livestock. J.A.V.M.A., *130,* (April 15, 1957): 323-329.

[2]Page, W. G., and Green, R. G.: An Improved Diagnostic Stain for Distemper Inclusions. Cornell Vet., *32,* (July, 1942): 265-268.

[3]Sund, J. M., Wright, M. J., and Simon, J.: Weeds Containing Nitrates Cause Abortion in Cattle. Agron. J., *49,* (May, 1957): 278-279.

[4]Whitehead, E. I., and Moxon, A. L.: Nitrate Poisoning. South Dakota Agric. Exper. Sta. Bull. 424 (June, 1952): 1-23.

Liver Torsion in a Sow

Ten days after farrowing normally, a 5-year-old sow refused her food in the evening, was depressed, weak, and pale in the morning, and died after a 12-hour illness. There were no signs of colic. On necropsy, 3 quarts of a watery, dark red fluid was found in the peritoneal cavity; there was ½-inch layer of dark red fibrin on the visceral surface of the liver; and the left lobe was twisted anticlockwise 180 degrees, to lie on the right central lobe. The twisted lobe was dark, swollen, and ruptured at the center. No predisposing causes were suggested.—*J. South Afric.Vet. M. A. (Sept., 1957): 212.*

[In June, 1950, a similar case was seen in a yearling sow nursing a litter of pigs 7 weeks old. Not much fluid or fibrin was present but the left lobe of the liver was twisted 180 degrees and was dark and swollen.—W.A.A.]

Pigs Poisoned by Iron Injection

While doing research on anemia in sucklings pigs, in Germany in December, 1955, 5 pigs in a litter 1 week old were injected intramuscularly with the recommended dose of iron dextran (100 mg. Fe). The other pigs in the litter served as controls.

Blood samples, taken at the time of the injection, showed no sign of anemia, and both the sow and the pigs were in good condition. In a few days, the injected pigs showed a lack of appetite, weakness, and a

loss of weight. They died, respectively, eight, 11, 15, 16, and 45 days after the injection. The control pigs remained healthy.

At necropsy, there was emaciation, edema of the muscles, and the livers and spleens were blackish brown. On microscopic examination, the livers contained variable quantities of hemosiderin.

It is believed that, in the absence of anemia, there was insufficient apoferritin available to combine with the iron which was, therefore, precipitated as hemosiderin. It is suggested that, in determining the dosage of iron, the degree of anemia should be considered.—*H. Behrens in Monatsh. f. Vet-med. (Aug. 1, 1957): 422.*

Nocardia Asteroides—A Newly Recognized Pathogen of the Mastitis Complex

Nocardia asteroides has been isolated from the mammary glands of 29 cows in California. Of these, 28 were from a dairy herd in which 18 per cent of the animals were infected.

Clinical manifestations of the infection have been observed in first-lactation heifers within a week of calving, as well as in older animals in midlactation. Infected glands produced altered milk which, in the more advanced cases, contained small white particles in a viscid, grayish exudate. Microscopically, these particles were masses of branched mycelia (fig. 1). Diseased glands were fibrotic and often contained palpable nodules 2 to 5 cm. in diameter. The course of the disease was febrile, with temperatures reaching 107 F. While only a single fatality was observed, the extreme induration of untreated glands soon made slaughter an economic necessity.

Pathological changes in infected glands included large granulomatous lesions of the parenchyma, in which the causative organism could be demonstrated, and proliferative changes of the ductile epithelium. The lining of the teat sinus was grossly thickened and granular (fig. 2). Lobular distribution of the pathological changes suggested an ascending infection via the teat canal. The disease was reproduced in an experimentally inoculated cow. Nocardia organisms were isolated only from the milk and mammary tissues of the diseased animals.

Soil samples from the holding corrals were shown to harbor the organism.

The Nocardia organisms in milk survived exposure to 64 C. for 30 minutes, but were killed by 66 C. in 30 minutes. Benzalkonium chloride and chlorine solutions at 200 p.p.m. were found to be the most germicidal of four disinfectant solutions tested.

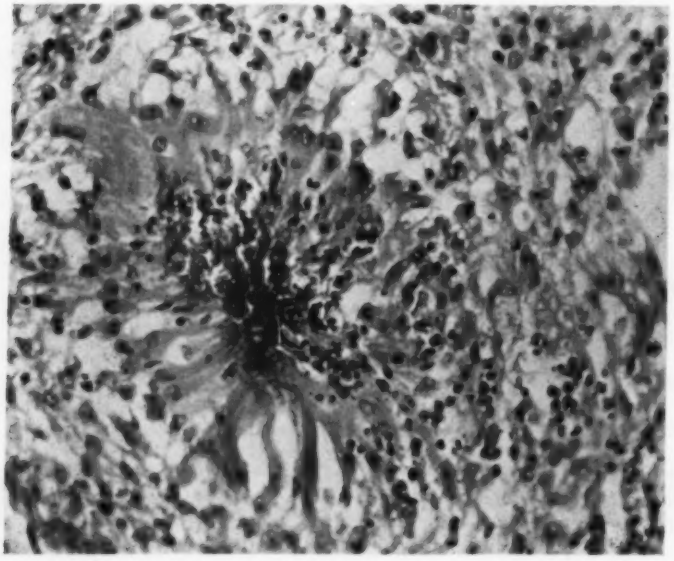


Fig. 1—Microscopic lesion from a natural Nocardia asteroides infection. The epithelioid band is prominent about this early focus. H & E stain; x 400.

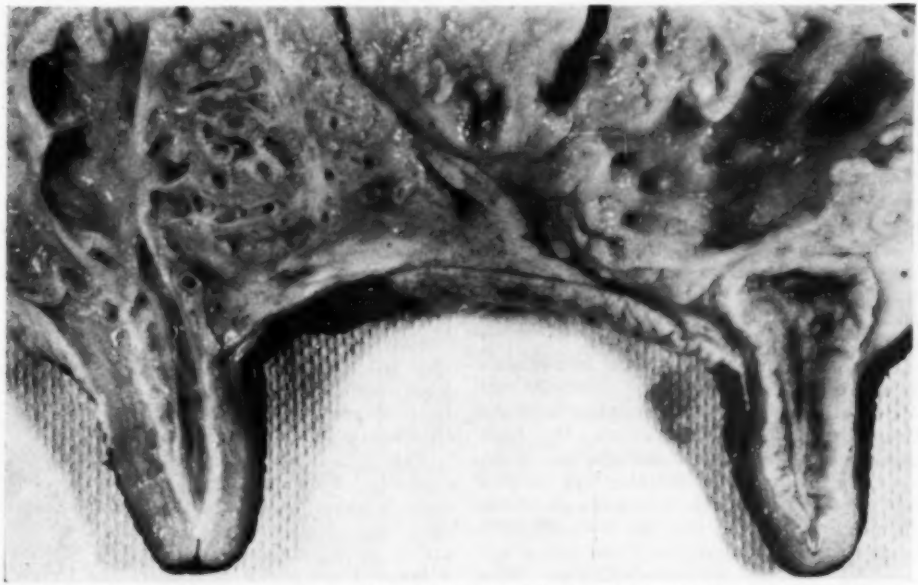


Fig. 2—Bovine udder showing gross pathological changes following experimental Nocardia asteroides infection. Notice the thickened granular appearance of the lining of the infected gland at the right; normal gland (left forequarter) to the left.

Antibiotic-sensitivity testing indicated novobiocin (Albamycin,* 30 μg.) and nitrofurazone (Furacin,** 100 μg.) were effective *in vitro*. A mixture of 500 μg. of novobiocin in 25 to 40 cc. of nitrofurazone (0.2%) solution was used successfully in cases of natural infection.

Tuberculin hypersensitivity resulting from *N. asteroides* mammary infections could not be demonstrated.—[*A. C. Pier, D. M. Gray, and M. J. Fossatti: Nocardia Asteroides—A Newly Recognized Pathogen of the Mastitis Complex. Am. J. Vet. Res., 19, (April, 1958): In press.*]

*Albamycin (novobiocin sodium) is produced by the Upjohn Co., Kalamazoo, Mich.

**Furacin (nitrofurazone) is produced by Eaton Laboratories, Norwich, N.Y.

Enzootic Heart Death of Swine

Ten years ago, so-called "heart death" in swine was common in East Germany, but it has now spread over all of Germany, Czechoslovakia, and Denmark. It is not recognized in Hungary.

The sudden, apoplectic death is usually preceded, two or three weeks, by a transient fever which usually escapes notice. Death is not due to myocardial changes. The condition has not been produced experimentally.

Of the many possible causes, those which merit further consideration are: (1) a disturbance of metabolism, since there is a shifting of the sodium potassium balance in favor of potassium both in the blood and in the muscles; and (2) an endocrine imbalance. Changes often found in the thyroid gland may indicate a dysfunction recognizable as thyrotoxicosis. Changes in the suprarenal glands, which are often smaller, with reduced fat and cholesterin content, are believed to be secondary. The fastest growing pigs seem most susceptible.

Both prophylactic and therapeutic measures have failed, but the use of hormones from the adrenal cortex, vitamin E, and iodine therapy are recommended. Swine in Hungary may escape this disease because there is less pressure for increased production and growth, less inbreeding, and greater freedom of activity.—*A. Mass et al. in Monatsch. f. Vet-med. (July 1, 1957): 355.*

Raising Healthy Pups

CHARLES E. BILD

Miami, Florida

IN THE CLINICAL examination of the pup, evaluation of the hemoglobin level of the blood is a most useful and yet a simple procedure. To be of value, the hemoglobin determination must be correlated with the body weight.[1] This is true in both medical and surgical conditions and of both young and mature dogs. These correlated examinations are intriguing.

A pup is born with a high hemoglobin level when its mother is in excellent condition and has a high hemoglobin level. As the animal nurses and grows, the high hemoglobin level is not maintained. However, nature provides for the dam to give her offspring, at birth, a reserve of blood-forming elements so that the mother's milk is all that is required until the young are weaned. Besides maintenance and tissue growth, the pup needs to manufacture 40 cc. of blood per pound of growth. During growth, the blood level increase usually lags slightly behind the weight increase. The optimum hemoglobin of the young is not as high as the optimum hemoglobin of the adult.

Often the above precepts are found to be the exception rather than the rule because of the following factors:

1) The dam does not always have a high level of hemoglobin, or is not in optimum condition, or both.

2) She may have less than optimum nutrition because of: (*a*) insufficient intake of nutrients; (*b*) kidney dysfunction, wherein she wastes nutrients, especially protein, in her urine; (*c*) internal parasites—the animal can not absorb all of her feed when afflicted with tapeworms and ascarids. Furthermore, she loses some of the level of nutrition when infected with hookworms, which rob her of blood, thereby causing an iron and protein deficiency; (*d*) external parasites such as ticks and fleas; these cause blood loss with its accompanying protein and iron deficits.

Growth of a pup, as measured by its weight and hematocrit or hemoglobin level, is in direct proportion to the daily intake of nutrients, plus that which the pup started with, minus the effect of such factors as parasites, disease, and poor management.

Oddly, if the dam has a lowered hemoglobin level and is in ordinary or poor condition, she gives birth to a pup with a high hemoglobin level. Again, as this pup nurses and grows, this high hemoglobin level is not maintained. At this point, the similarity ends between pups from a dam that has a high hemoglobin level and is in good condition and pups from a dam with a lowered hemoglobin level, or less than the optimum condition, or both.

This latter pup is the one we often see clinically. Pups in only fair condition are most susceptible to parasitism and disease. Any parasitic or disease condition, or stress situation, causes the animal to have a lowered net nutritive intake. The weight and hematocrit or hemoglobin levels then are not optimum. Thus, the well-fed pups get stronger, while those on ordinary feed show the effects of ordinary care.

It has long been believed, and correctly so, that the extent of an infection depends on the resistance of an animal and the pathogenicity of the organism. This relationship is also true of internal parasitic infections. However, it is possible to raise excellent pups when internal parasites are present.

The following routine has consistently produced excellent results: For pups the size of Cocker Spaniels, 5 days old, give each 1 drop of a vitamin-iron supplement (Myeladol*) four times daily (using a toothpick) and increase the dose so that, at 2 weeks of age, each is getting about 4 to 5 drops of the formula four times daily. When their eyes are open, give each pup a small amount of ground raw beef four times daily. This should be a good grade of freshly ground stew beef and need not be lean. Poor grades of hamburger may be toxic for pups. A pinch of raw liver may be added to the ground beef for each pup at each feeding.

When the pups are 2½ to 3 weeks old, they should be given milk four times daily. Canned milk and water in equal parts are

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*Myeladol is produced by the Upjohn Company, Kalamazoo, Mich.

most commonly used. The addition of the milk supplement is not necessary if the dam is producing an adequate amount of milk. Pups should eat with the dam, and as they grow, the food intake and the supplements should be increased. "As the twig is bent, so grows the tree." Good feed, good hemoglobin level, good substance or body weight, and good coat all mean good health. This painstaking care of the pup more than pays for the extra time and expense involved, and the well-cared-for healthy pup rarely carries an odor.

At 3 or 3½ weeks, the pups should be examined for parasites and, if necessary, wormed. Usually, I write out the instructions and have the owner worm the pups at home. Even with the best of care, pups may harbor hookworm and ascarid ova, although they appear in excellent condition as evidenced by their weight, hair coat, and hematocrit or hemoglobin level. But such pups probably have fewer parasites than the ones raised without the supplements. Clinical investigations[2,3] indicate that, besides the early vitamin and calorie intake, iron is important. Dependent upon the clinician's judgment, pups should be rechecked two or three weeks after the first examination. Many pups so raised do not have worms when they are young.

A dam should nurse her young as long as possible. Poorly fed dams slow down their milk production at two or three weeks but, if well fed and well cared for, they may lactate heavily for eight or ten weeks. The nutrients from the dam have much to do with immunity and resistance factors. Among the many clinical variables in the problem of immunity is the fact that when there is weight loss or blood level loss, or both, there may be a corresponding loss of immunity and resistance factors.

Many immunity factors may be present in the milk of the dam and these seem to leave the pups when they are weaned at 3 weeks or at 8 weeks. The resistance of a pup is also a factor in coccidiosis. Poorly nourished pups showing a poor coat, poor growth, and a lowered blood level are good candidates for all possible pup disease conditions. However, many well cared for pups harbor a few coccidia and the parasites never develop in sufficient numbers to cause diarrhea. Many pups are untreated and apparently develop an immunity to coccidia. From its nutrients, the dog builds up resistance and immuity factors which aid in combating all disease conditions.

I have never known of a contraindication for the use of the vitamin supplement for pups. When they are weaned and are eating well, I advise the use of cod-liver oil, yeast, and iron, separately. To supply iron for pups, we use a hematinic tablet that contains 1/3 gr. iron sulfate and 1/20 gr. copper sulfate†—1 per 10 or 12 lb. of body weight three or four times daily.

The regular charting of the hematocrit and weight, along with clinical inspection of general well-being and coat, are good veterinary service routines.

References

[1]Cannon, Paul R.: Some Pathologic Consequences of Protein and Amino Acid Deficiencies. Charles C Thomas Co., Springfield, Ill., 1948.

[2]Bild, Charles E.: Personal observations from the recording of the hematocrit determination 13,000 times.

[3]Bild, Charles E.: Erythrocyte Sedimentation Rate and Hematocrit. J.A.V.M.A., *129*, (Nov. 15, 1956): 471-474.

†Minitabs Hematinic is produced by Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.

Prenatal Prevention of Leptospirosis

Two vaccines prepared from virulent strains of *Leptospira pomona* were used, in New Zealand, to vaccinate and revaccinate 26 cows late in pregnancy. When their calves were challenged with the homologous strain of *L. pomona* at the age of 10 to 25 days, only 1 of 25 calves showed infection as compared with 19 of 20 calves from unvaccinated cows in the same herd. The cows vaccinated with an alum-precipitated vaccine gave a higher and more persistent antibody serum response than did cows vaccinated with the lyophilized vaccine, but no difference in the immunogenic properties of the two vaccines was detected.—*New Zealand Vet. J. (Sept., 1957): 83.*

More Hinnies.—A blue roan female Mexican burro, in Illinois, raised 2 hinnies—a sorrell with four white socks and a white mane and tail, and a seal-brown with four white socks—both sired by a Shetland stallion.—*Prairie Farmer (Nov. 2, 1957): 6.*

The Ill Effects of Excessive Formaldehyde Fumigation on Turkey Poults

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FOR A NUMBER of years, the writer has been making recommendations to the hatcherymen of his locality that call for an increase in the amount of fumigant used on the eggs in the hatcher compartment of the incubator. These recommendations were made as part of a sanitation program and were directed at controlling contamination or infection with Salmonella species and other less pathogenic bacteria within the hatchery. In the absence of such fumigation, a navel infection problem sometimes occurs, resulting in morbidity and mortality.

During the ensuing years, a number of baby poults with diseases that could possibly be associated with formaldehyde fumigation have been submitted for necropsy. These diseases were: (1) aerosacculitis or air sac infection, (2) ascites or so-called "water belly," and (3) conjunctivitis. Of these three diseases, only ascites has been previously incriminated as being associated with fumigation of turkey poults.[11]

Hatcherymen routinely fumigate with a mixture of potassium permanganate and formaldehyde solution and each hatcheryman appears to use his own system, depending on the nature of his operations. The usual practice is to fumigate the eggs one or two times during the incubating process and then to fumigate after the eggs are transferred to the hatching trays, just after "pipping" has started. Fumigation is avoided from the second to the fifth day after setting, in view of its known detrimental effect on the embryos during that period. For 100 cu. ft. of incubator space, 17.5 Gm. of potassium permanganate and 35 cc. of formaldehyde solution is recommended by some,[3,7,8] 20 Gm. of potassium permanganate and 40 cc. of formaldehyde by others.[3,6,10] The latter amounts were used in this experiment.

The turkey hatcherymen contacted never intentionally used so-called "live bird fumigation" (fumigation of the poults immediately after hatching). Unlike the relatively uniform hatching of baby chicks, a small number of precocious poults may hatch early and a larger number usually hatch late. The experiment described in this report was directed toward revealing ill effects, if any, which formaldehyde fumigation would have on poults already hatched or in the advanced stages of hatching at the time of fumigation.

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MATERIALS AND METHODS

As soon as possible after hatching, 125 poults were allotted to five groups of 25 poults each. A commercial incubator (Jamesway 262) was adjusted in accordance with the recommendations of the manufacturer for hatching (dry bulb reading 98.5 F. and wet bulb reading 90-92 F.).

Each group was given a turkey starter ration and fresh water. The first group, used as controls, was placed in a commercial baby chick battery brooder (Oakes-801A) with sufficient heat to give a thermometer reading of 98 F. at the edge of the hover at the floor level.

The second group of poults was placed in the incubator described. As soon as the desired temperature and humidity peaks were reached, routine fumigation was applied, using a large glass bowl (ten times the volume of the materials before mixing) placed at the bottom of the incubator.

The door of the incubator was closed immediately. Since the capacity of the incubator was approximately 50 cu. ft., 10 Gm. of potassium permanganate and 20 cc. of formaldehyde solution were used. The birds in this and the three succeeding groups were left in the hatcher for 30 minutes, then placed in a baby chick brooder of the same type used for group 1.

The third group of poults was placed in the incubator after it was briefly aired to remove any remaining fumigant used on the previous group. The same procedure was then followed as for group 2 except that the amout of fumigant was doubled. This is the concentration frequently used in disease control. The fourth and fifth groups were then fumigated with four times and six times, respectively, the concentration of the fumigant used on group 2. Later, each group was placed in a separate brooder. All birds of each group were observed twice daily and the results recorded.

RESULTS

At 20 hours postfumigation, 1 poult in group 1 was dead (no pathological changes

were found), but all of the birds in group 2, given single strength fumigation, were alive and showed no clinical evidence of distress. In group 3, given twice the amount of fumigant given to group 2, 1 bird was dead, several were gasping, and 5 showed signs of conjunctivitis. The latter 5 were marked with dye for identification. Of the 50 poults given four or six times the usual concentration of fumigant, only 8 were standing, 37 were dead, 5 were dying, and all showed conjunctivitis.

At 40 hours postfumigation, the remaining 24 controls and all 25 poults in group 2 were alive and vigorous. In group 3, 4 of the 5 birds which previously had conjunctivitis were dead; 2 of these had both eyes pasted shut. In groups 4 and 5, all of the poults but 1 were dead and it was dying.

Necropsies were done on all dead birds. An acute inflammation of the conjunctival sacs, oral cavity, tongue, pharynx, and larynx was observed in each. Death was evidently due to suffocation resulting from an occlusion of the pharyngolaryngeal orifice. Neither aerosacculitis nor ascities was observed in any of the 55 deceased birds. However, there was some degree of subcutaneous edema in all of the dead birds. One half of the birds in groups 1, 2, and 3 were killed for necropsy on the fifth day and the other half on the tenth day. Aerosacculitis was detected in 2 of the control birds and in only 1 of the 45 surviving birds in groups 2 and 3. Neither ascites nor subcutaneous edema was observed in any of these poults.

DISCUSSION

Live poults exposed to fumigation in the concentration routinely used by commercial establishments showed no ill effects when killed for necropsy five or ten days later.

However, the mortality was 25 per cent when the amount of the fumigant was doubled, and 96 and 100 per cent when the amount was increased four and six times, respectively. In large hatcheries, when the final fumigation is applied, some poults may have hatched or be in the advanced stages of hatching and will thus be exposed to live fumigation and, if double strength fumigation is being used, some degree of conjunctivitis and suffocation resulting from a pharyngolaryngitis can be expected. If the concentration of the fumigant is inadvertently increased to more than twice the amount routinely used, any birds exposed will probably be fatally injured.

Fumigation is used to control "mushy" chick disease (omphalitis) and similar infections in chicks and poults, and is also useful in controlling hatchery-borne infections due to *Salmonella pullorum*, *Salmonella gallinarum*, *Salmonella typhimurium*, and other species of pathogenic microorganisms.[1,3,5,7,10] Fumigation was reported to increase embryo mortality during the early stages of incubation but later the mortality was low, even at four and seven times the amount of fumigant normally used.[7] It was reported from England that fumigation with approximately 5 oz. (150 cc.) of formaldehyde solution and 3 oz. (93 Gm.) of potassium permanganate per 100 cu. ft. was lethal for *S. typhimurium* on eggshells and on fluff, and that this concentration of fumigation had no adverse effect on hatchability, provided that certain precautions were taken.[13] One half of these quantities was recommended for routine use. However, the one half concentration of the fumigant would still be twice that normally used in the United States.

Conjunctivitis in chicks and poults was found to result from a variety of infections, including Aspergillus, Salmonella, and paracolon microorganisms.[6,9] Ammonia fumes from the litter in poorly ventilated houses and mash sprinkled on box tops, in an effort to induce eating in baby chicks, have also been reported as producing conjunctivitis.[2,4,12]

No evidence of ascites was observed in any of the poults exposed to the concentrations of the fumigant used in this experiment, yet all of the deceased fumigated birds presented some degree of subcutaneous edema. This confirms the report[11] that formaldehyde fumigation may cause subcutaneous edema but not that it may cause ascites in poults. Ascites has been induced in poults rather uniformly by using certain amounts of sodium chloride and sodium bicarbonate but not so uniformly with fumigation.

SUMMARY

1) Formaldehyde fumigation as normally used (20 Gm. of potassium permanganate and 40 cc. of formaldehyde per 100 cu. ft. of incubator space), and at two, four, and six times the normal concentration, failed to induce gross air sac lesions.

2) Fumigation of live poults with twice the usual amount of fumigation resulted in a 25 per cent mortality.

3) Excessive fumigation of live poults caused conjunctivitis and gasping. Severely affected birds soon became prostrate and died.

4) Gross pathological changes included exudative inflammation of the conjunctival sacs and mucous membranes of the oral and pharyngeal cavities. Death from suffocation, due to occlusion of the pharyngolaryngeal orifice, occurs within 40 hours after fumigation.

5) Subcutaneous edema was observed to some degree in all poults that died as a result of fumigation, but in none of the survivors when killed for necropsy five or ten days after fumigation.

References

[1]Bierer, Bert W.: Avian Navel Infection. Vet. Med., *45*, (1950): 447-450.
[2]Bierer, Bert W.: Keratoconjunctivitis in Turkeys: A Preliminary Report. Vet. Med., *51*, (1956): 363.
[3]Bittenbender, H. A.: Incubator Fumigation. New England Poultrymen, *31*, (1940): 8-9.
[4]Bullis, K. L., Snoeyenbos, G. H., and Van Roekel, H.: A Keratoconjunctivitis in Chickens. Poult. Sci., *29*, (1950): 386.
[5]Carus Chemical Co.: Folder on Fumigation, La Salle, Ill., 1957.
[6]Evans, W. M., Bruner, D. W., and Peckham, M. C.: Blindness in Chicks Associated with Salmonellosis. Cornell Vet., *45*, (1955): 239.
[7]Insko, W. M., Jr.: Physical Conditions in Incubation. Fertility and Hatchability of Chicken and Turkey Eggs. (Edited by Lewis W. Taylor). John Wiley and Sons, Inc., New York (1949): 234.
[8]Insko, W. M., Jr., Steele, D. G., and Hinton, C. M.: Kentucky Agric. Exper. Sta. Bull. 416, 1941.
[9]Moore, Earl E.: *Aspergillus Fumigatus* as a Cause of Ophthalmitis in Turkeys. Poult. Sci., *32*, (1953): 796.
[10]Petersime Incubator Co.: How to Use Formaldehyde Gas Treatment. Bulletin, Gettysburg, Ohio, 1950.
[11]Scrivner, L. H.: Experimental Edema and Ascites in Poults. J.A.V.M.A., *108*, (1946): 27-32.
[12]Vineland Poultry Labs.: A Chick Condition Caused by the Use of Chick Boxes and Boxtops as Feeders. Bulletin, Vineland, N. J., Feb., 1954.
[13]Wilson, J. E.: The Control of Salmonellosis in Poultry with Special Reference to Fumigation of Incubators. Vet. Rec., *63*, (1951): 501-503.

Oral Therapy for Erysipelas in Turkeys.—In laboratory experiments, the most effective antibiotic (oral) therapy for erysipelas in turkeys was procaine penicillin given in water (12 mg./gal.) or in feed (600 Gm./ton), or with chlortetracycline (100 Gm./ton, plus 1,000 mg./gal.), or with combinations of these two antibiotics. In one field trial, during severe winter weather, the loss from erysipelas in 300 untreated control birds was 18.3 per cent, and in 1,000 birds given 3.6 Gm. of procaine penicillin per gallon of water, the loss was 1.3 per cent.—*C. E. Boyer and J. A. Brown in Avian Dis. (Nov., 1957): 275.*

Virus Hepatitis of Ducks.—Neutralization tests showed that there was no serological relationship between this disease and virus hepatitis of man or of dogs. The significant pathological changes in ducks were an enlarged, pale, soft liver sprinkled with hemorrhages. Microscopically, there was necrosis of the parenchymal cells and proliferation of the bile duct epithelium.—*J. Fabricant et al. in Avian Dis. (Nov., 1957): 256.*

Vacuolated Neurones and Scrapie

Vacuolated neurones in the medulla have long been considered the only constant microscopic lesion in sheep with scrapie. The specificity of this lesion was questioned when such vacuoles were demonstrated in 43 of 57 healthy sheep. However, 2,279 vacuoles were found in 94 sections from the medullas of 16 goats in which scrapie had been induced, but only eight vacuoles were found in 592 sections from medullas of 16 healthy goats. In a recent study, vacuolations of neurones in the medulla were much more common in sheep suffering from advanced natural scrapie than in normal sheep. However, scrapie can not be diagnosed on the presence of such vacuoles alone.—*Nature (Aug. 24, 1957): 393.*

The Enteroviruses.—The National Foundation for Infantile Paralysis, recognizing that poliomyelitis, Coxsackie, and ECHO viruses all inhabit the alimentary tract as well as share other properties, has changed the name of its Committee on the ECHO viruses to the Committee on the Enteroviruses.—*Am. J. Pub. Health (Dec., 1957): 1556.*

The louse fauna of a whale was used as an aid in identifying one, which had been slaughtered by Eskimos, as a Gray Whale. Three species of Cyamidae lice, typical of this whale, were found on portions of the skin.—*J. Parasitol. (June, 1957): 352.*

Thyroprotein Fed to Sows May Save Pigs

Feeding thyroprotein to sows results in a marked temporary increase in milk production but in little, if any, increase for an entire lactation. The fat content of the milk also may be increased for a short time.

Since baby pig mortality is closely related to their poorly developed body temperature-regulating mechanism, and since adequate milk consumption aids pigs in maintaining normal temperatures, feeding thyroprotein to sows for three days prior to farrowing, and for a week afterward, should help decrease pig losses and increase their rate of gain.

The temperatures of strong pigs, 48 hours old, which had not been allowed to nurse, declined 7 to 8 degrees (F.). Pigs up to 1 month old, on a low plane of nutrition, had temperatures of 100 to 102 F. while pigs in the same litter but on a higher plane of nutrition had temperatures of 102.4 to 103.6 F.

In a field trial where 28 sows were fed thyroprotein, 100 mg. per pound of feed from the 110th day of gestation until the pigs were a week old, fewer pigs were lost and their average weight gain at 2 weeks was 22.8 per cent greater than in controls. —*Cornell Univ., Oct., 1957.*

Evaluation of Dried Rumen Products.—When lambs were fed dried rumen product (1 Gm. daily), at the South Dakota State College, their rate of gain and feed efficiency were not improved. When rumen content was recovered (via a fistula) from lambs after 11 weeks of such feeding, the *in vitro* activity of the rumen flora, as measured by the digestion of cellulose, was no greater than with rumen content of untreated lambs.—*J. Anim. Sci. (Nov., 1957): 1054.*

Carotene-Protein in Green Leaves.—The occurrence of carotenoid-protein complexes has been reported in certain bacteria and animal tissues, but not previously in green cells. Recently, a colored proteide containing B-carotene has been isolated from chloroplasts of green leaves, but only in minute quantities.—*Nature (Oct. 5, 1957): 699.*

A Chemobiotic Feed Additive.—A new product, tetra (4) -alkyl-ammonium-stearate (Dynafac, Armour & Co.), derived from animal fat, has been tested in commercial feedlots. It is a free-flowing, insoluble powder that stays in the intestine and attacks harmful bacteria and fungi. In 20 weeks, while control steers gained 1.62 lb. daily, those given the chemobiotic gained 1.77 lb. daily; steers given stilbestrol implants, only, gained 1.88 lb. daily; steers given both gained 2.18 lb. daily. Pigs fed this product had fewer scours, and feeding lambs had a reduced mortality.—*Breeder's Gaz. (Nov., 1957): 7.*

Agammaglobulinemia.—A*gamma*globulinemia and hypo*gamma*globulinemia are terms used to indicate the lack, or the marked lowering, of antibody in the blood serum, since antibodies are normally found in the *gamma* globulins. These terms define a syndrome featured by: recurrent bacterial infection; absence of acquired antibodies; lack of isohemagglutinins; and a favorable response to the injection of *gamma* globulins in blood donations from normal persons. At present, the most practical means of diagnosing this condition is by using paper chromatography.—*J.Am. Osteopath. A. (Nov., 1957): 182.*

Preventing Selenium Poisoning.—The uptake of selenium by plants can be restricted by sulfates, but accomplishing this by the application of fertilizers would be difficult. When radioactive materials were used, and rats were injected in one flank with a sulfate solution and in the other flank, ten minutes later, with the selenate, the two apparently competed for entry into the liver. However, there is little basis for hope that feeding any sulfur compound will control selenium poisoning in animals. —*J. Agric. and Food Chem. (Dec., 1957): 931.*

Pelletized Hay for Cattle.—That feeding bulky hay to cattle may not be efficient was indicated in an experiment with beef calves at Cornell University. Calves fed mixed hay plus alfalfa pellets, from ½ to 2 inches long, gained faster than those fed ordinary mixed hay. To be used economically, the hay would have to be pelleted in the field and transported to storage in wagons. A machine for this purpose is being devised.—*New York College of Agriculture release, Dec. 16, 1957.*

Dean William Arthur Hagan

Dean W. A. Hagan, Eminent Educator

On Jan. 9, 1958, the Alumni Association of the New York State Veterinary College honored Dean William Arthur Hagan by presenting his portrait to Cornell University. This excellent likeness remarkably portrays his personal qualities.

Born at Fort Scott in southeastern Kansas on Oct. 14, 1893, he became interested in veterinary medicine while assisting an uncle, Dr. E. F. McGraw (CVC '93), in his general practice at Fort Scott. He spent four summers, including those during his first college years, with his uncle.

In 1915, he acquired his D.V.M. degree at Kansas State College. He remained there for a year as an instructor in veterinary pathology, then, in 1916, joined the faculty at Cornell University as an instructor in veterinary pathology and bacteriology. He earned an M.S. degree there in 1917.

Dr. Hagan was made head of the Department of Pathology and Bacteriology in 1926 and, in 1932, at the age of 38, he became dean of the school. After 26 years, as the dean of the New York State Veterinary College at Cornell University, he has well earned the title of "Dean of Deans." He was awarded the honorary degree of Doctor of Science by Kansas State College in 1938.

It is eminently fitting that the portrait of Dr. Hagan should grace the walls of the fine new veterinary school at Cornell University. It was planned and built under his supervision, and who should be better qualified for such a responsibility? Not only has he set a modern record for longevity as an administrator of one school but he is familiar with the organization of all North American and several foreign veterinary schools. For 13 consecutive years, he represented the AVMA as an advisor to all our veterinary schools—eight years on the Committee on Education and five years as a member of the Executive Committee of the Council on Education which was created in 1946. He was the "bell wether" of the latter group and served as its secretary for two years.

Dr. Hagan's pre-eminence as an educator is also recognized abroad. During a sabbatical leave, in 1925-1926, he studied abroad as a European fellow of the International Education Board. In 1945, he served as veterinary consultant to the U. S. Control Council in Germany, assisting military staff officers in planning the rehabilitation of veterinary schools. He is an honorary member of veterinary organizations in Britain, France, Italy, and Sweden. For many years, he has been the U. S. member of the Permanent Committee of the International Veterinary Congress which convenes approximately every four years.

His Extracurricular Activities

His broad understanding of practical as well as scientific veterinary medicine has often brought demands for Dr. Hagan's services in extracurricular fields. He served in various capacities as a "trouble shooter" for the federal Bureau of Animal Industry. In 1945, during a leave of absence, he spent ten months making a survey of Bureau activities in all parts of the nation, as a special consultant to the chief of the B.A.I. Later, when aftosa appeared in Mexico and trouble developed in the U.S.-Mexican joint commission for the eradication of the disease, he toured Mexico as a consultant with a committee from the U.S. Senate. He was also selected to discuss with southwestern cattlemen's organizations problems arising from the disease in Mexico.

He served with Drs. R. A. Kelser, R. E. Shope, and J. Traum as a committee to make plans and select a location for a laboratory for research on aftosa. (It is now in operation on Plum Island, N. Y.) Since 1948, he has served on the Committee on Animal Health for the National Research Council (its chairman until 1955).

Dr. Hagan was president of the AVMA in 1946-1947, presiding at the San Francisco convention. He had previously served on the Executive Board for five years, being chairman in 1944-1945. He has served on many other AVMA committees.

His colleagues know Dr. Hagan as an unassuming, sympathetic, congenial associate. Posterity may know him best as an author, especially as the senior author of the outstanding textbook, "The Infectious Diseases of Domestic Animals," by Hagan and Bruner, the third edition of which was published in 1947.

Dr. and Mrs. Hagan reside at 320 The Parkway, Ithaca, N. Y.

Current Literature

ABSTRACTS

Hormones and Relaxation of the Cervix

Anatomically, the uterine cervix in swine was found to consist of two portions: the long, vaginal portion, which constricted and relaxed cyclically; and the short, uterine portion which remained tightly closed.

Daily measurements of the diameter of the cervices of 9 normal sows showed that the vaginal portion was constricted during days 1 and 2 of estrus and then relaxed gradually until about day 9 of the estrous cycle, with gradual constriction beginning again about day 14.

After oophorectomy, there was complete relaxation of the vaginal portion of the cervix, while the uterine portion was not noticeably affected. Injection of estrogen into castrated sows caused cervical constriction, which continued as long as estrogen was injected. Estrogen injected into normal sows in midcycle somewhat hastened cervical constriction.

Even large doses of progesterone (20 mg. daily) were unable to cause relaxation of the cervix either in sows in heat or in castrated sows in which cervical constriction was caused by the injection of 1 mg. of estrogen daily. Relaxin (Releasin), injected at the rate of 750 GPU per day, did not cause cervical relaxation. Experiments on the effect of relaxin on the cervix are being continued.

Evidence is presented to show that ejaculation in swine is not into the uterus but into the midregion of the vaginal part of the cervix, and that ejaculation does not occur until the glans of the penis is tightly gripped by the vaginal part of the cervix.—*[J. C. Smith and A. V. Nalbandov: The Role of Hormones in the Relaxation of the Uterine Portion of the Cervix in Swine. Am. J. Vet. Res., 19, (Jan., 1958): 15-18.]*

Hormonal Regulation of Energy Metabolism

The proceedings of the Conference on Hormonal Regulation of Energy Metabolism are presented in this volume. This critical evaluation of current knowledge about energy metabolism should be of interest to clinicians and fundamental scientists.—*[Hormonal Regulation of Energy Metabolism. Compiled and edited by Laurance W. Kinsell. 242 pages. Charles C Thomas, 301-327 East Lawrence Ave., Springfield, Ill. 1957. Price $5.25.]*

Effect of Cortisone on Anaplasma Immunity. I

The relapse, which ordinarily follows splenectomy in Anaplasma-infected calves, did not occur in 6 of 7 calves which had been treated for four to five weeks before splenectomy with adrenal cortex steroid. Moreover, in these animals, the titers of complement-fixing antibody did not fall significantly after splenectomy.

Infected calves, which received this hormone at splenectomy and for varied periods thereafter, showed a similar postsplenectomy increase in Anaplasma and decrease in complement-fixing antibody, as observed in nontreated infected animals.

A more proficient bone marrow activity, indicated by increased blood cell counts and an increase in circulating reticulocytes, was manifested in animals to which cortisone was administered for varied periods prior to splenectomy.—*[M. Ristic, F. H. White, J. H. Green, and D. A. Sanders: Effect of Cortisone on the Mechanism of Anaplasma Immunity in Experimentally Infected Calves. I. Hematological and Immunoserological Studies. Am. J. Vet. Res., 19, (Jan., 1958): 37-43.]*

Effect of Cortisone on Anaplasma Immunity. II

Hypertrophy of the spleen, inflammation and swelling of the mucous membrane of the gallbladder, purplish discoloration of the bone marrow, and petechiae of the pericardium, pleura, and diaphragm were the most characteristic gross abnormalities observed in calves infected with Anaplasma which relapsed, or relapsed and died, postsplenectomy.

Animals which relapsed after splenectomy had depressed erythropoietic activity of the bone marrow, in contrast to an intense bone marrow activity observed in animals to which cortisone had been administered prior to splenectomy. Leukocytic infiltration of the capsule of Glisson was the most pronounced hepatic change in animals which relapsed postsplenectomy. Hematopoietic activity of the liver was indicated by the presence of foci of erythroblasts and normoblasts in 2 cortisone-treated infected animals.

General reduction of white pulp of the malpighian follicles, with a decreased number of lymphoblasts and an increase of vacuoles and degenerated reticular cells of the germinal centers, was more pronounced in spleens of animals which did not receive cortisone. The red pulp portions of the venous sinuses and the Billroth cords of the spleen were generally enlarged and contained many reticular cells of various sizes, giving the red pulp a cellular appearance.—*[M. Ristic and W. L. Sippel: Effect of Cortisone on the Mechanism of Anaplasma Immunity. II. Studies of Pathological Changes. Am. J. Vet. Res., 19, (Jan., 1958): 44-50.]*

Piperazines as Anthelmintics for Swine

Data obtained in critical trials showed that piperazine, administered at the rate of approximately 50 mg. per pound of body weight, was a safe and effective agent for the removal of ascarids and nodular worms from individually treated swine. The performance of the chemical against these parasites appeared to be substantially impaired, however, when a similar dosage was given in feed or drinking water to groups of as few as 3 or 4 animals. The lower aggregate efficacy was generally ascribable to 1 or 2 animals in a group, suggesting that competition among pen mates for the medicated feed or water, differences in palat-

ability of the several preparations employed, or variations in water consumption occasioned by seasonal or diurnal fluctuations in atmospheric temperature may have been responsible for inadequate dosing of some animals.

The need for critical studies of the several piperazine compounds under practical farm conditions is clearly indicated by the data presented and by the paucity of such information in the published record.—[*F. D. Enzie, E. H. Wilkens, and M. L. Colglazier: The Use of Piperazines as Anthelmintics for Swine. Am. J. Vet. Res., 19, (Jan., 1958): 19-24.*]

Tumors of the Bovine Gallbladder

Eighteen primary epithelial tumors of the bovine gallbladder are described. Seventeen were considered to be papillary cystadenomas and one a papillary adenocarcinoma with extension to the liver and portal lymph node metastasis.

Evidence is presented which suggests that papillary cystadenoma occurs with more frequency than is suggested by the few reports in the literature but, because of its unobtrusiveness, has largely escaped the attention of veterinary pathologists. Adenocarcinoma of the gallbladder is believed to be rare.—[*W. A. Anderson, A. W. Monlux, and C. L. Davis: Epithelial Tumors of the Bovine Gallbladder—A Report of Eighteen Cases. Am. J. Vet. Res., 19, (Jan., 1958): 58-65.*]

Incidence of Arthritis in Swine

Arthritis ranks as a principal cause for the condemnation of swine carcasses in the United States in spite of increased vaccination against swine erysipelas. Challenges with viable cultures of *Erysipelothrix rhusiopathiae* were made in 96 swine (66 vaccinated and 30 controls) at varied times from six weeks to four months. Although death losses were markedly reduced, a 62 per cent incidence of chronic arthritis resulted in surviving vaccinated pigs (14% in controls).

Since marked anaphylaxis occurred at the time of intravenous challenge and the incidence of arthritis was much greater in vaccinated pigs, sensitization was considered an important factor in the etiology of rheumatoid-like arthritis in swine.—[*G. M. Neber, Charles B. Swenson, Leo P. Doyle, and D. Sikes: The Incidence of Arthritis in Swine Following Vaccination for Swine Erysipelas. Am. J. Vet. Res., 19, (Jan., (1958): 5-14.*]

Correction—First-Instar Hypoderma Larvae and Modified Erlenmeyer Flask

In the Current Literature section of the Jan. 1, 1958, JOURNAL (p. 39), the source of the abstracts, "Flask for Culturing Yolks of Turkey Eggs" and "Sodium Chloride and Hypoderma Larvae," was in error. Both articles appeared in the January, 1958, *American Journal of Veterinary Research*. The page numbers are correct.

BOOKS AND REPORTS

Swine Feeding and Nutrition

The author has assembled and condensed a great deal of background information on many aspects of swine feeding, and has listed many references for advanced readers.

The ten chapters of the book discuss not only the feed nutrients, but also the additives other than nutrients, *i.e.*, antibiotics, arsenicals, enzymes, hormones, surfactants. Basic information is reviewed briefly, and the more recent findings in greater detail. Many deficiency conditions are illustrated.

For the veterinarian, the book provides abundant information of the type which is in the hands of swine raisers. It should provide an excellent basis for more active cooperation between the practicing veterinarian, the swine breeder, and the manufacturer of formulated feeds and swine supplements.

Three sections are devoted to the relative value of feeds, feeding pigs during various stages of growth, and feeding the breeding herd.

The final chapter or appendix deals with swine management recommendations. A limited number of tables provides statistical data.—[*Swine Feeding and Nutrition. By Tony J. Cunha. 296 pages. Illustrated. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N.Y. 1957. Price $5.00.*]—R. C. KLUSSENDORF.

The Beginnings of Embryonic Development

A symposium on "Formation and Early Development of the Embryo" was the basis for this book; however, articles from additional investigators have been included to expand the coverage of the general subject. The investigations cover both descriptive and experimental work on the biological and chemical levels, and the specific discoveries and analyses presented exemplify various approaches toward the understanding of how sperm and egg produce a new individual.—[*The Beginnings of Embryonic Development. Edited by Albert Tyler, R. C. von Borstel, and Charles B. Metz. 400 pages. American Society for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C. 1957. Price $8.75.*]

The Species Problem

The species problem is one of primary interest to the biologist, especially as it relates to the integration of the many branches of biology, *i.e.*, systematics, genetics, ecology, and to physiology and the study of behavior. This volume is a symposium on the subject, which was presented at the Atlanta meeting of the American Association for the Advancement of Science in 1955.—[*The Species Problem. Edited by Ernst Mayr. 395 pages. American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C. 1957. Price $8.75.*]

THE NEWS

Special Election — Executive Board District IV

Ballots were mailed on Jan. 10, 1958, to AVMA members in Executive Board District IV for the nomination of candidates to fill the unexpired term of the late Dr. R. S. Sugg whose death on January 4 was reported in the last issue of the JOURNAL (*see* pp. 137-138). Dr. Sugg's term would have expired at the conclusion of the annual meeting in 1959.

District IV comprises Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, Cuba, Puerto Rico, South America, and the West Indies.

The five candidates receiving the highest number of votes in the nominating election which closed on February 10 are listed on a ballot mailed to District IV members around Feb. 14. The final election polls will close 30 days later.

Since the election can not be completed before the next meeting of the Executive Board, which was scheduled some time ago for March 6-18, 1958, President Armistead has appointed Dr. McKenzie Heath of Auburn, Ala., to represent District IV until the election has been completed.

"Cross-Country", New Nationwide Farm TV Program, to Feature Some AVMA Films

Veteran broadcasters, Lloyd Burlingham and John McDonald, will be commentators on a new, nationwide, farm television program called "Cross-Country." Four regional bureau chiefs, Mal Hanson (WOW), Omaha, Neb.; Bob Parker (WBAY), Green Bay, Wis.; W. A. "Doc" Ruhmann (WBAP-TV), Fort Worth, Texas; and Dick Passage (KMI), Yakima, Wash., gather information and feature material from farm directors for both live and filmed use on the rural TV program.

Roving camera crews film on-the-spot news events as they occur. The four regional chiefs provide film from their territories, and the U.S.D.A. provides a weekly five minute news summary.

The first program was televised on January 27. Subsequent shows will use several films from the AVMA Film Library and will also feature interviews with veterinarians in various parts of the country.

Additional features will be contributed by agricultural associations, land-grant colleges, industries engaged in agriculture, the AVMA, and other sources.

Great Lakes Regional Conference on Rabies Meets in Chicago

The Great Lakes Regional Conference on Rabies will meet Feb. 19-20, 1958, at the Hotel LaSalle in Chicago. The conference convenes at 1 p.m. on February 19, with a welcome from Dr. Roland R. Cross, followed by an address on "Rabies in Wildlife" by Dr. Ernest S. Tierkel.

"Human Antirabies Prophylaxis" will then be discussed by several physicians.

Beginning at 9 a.m. on February 20, comprehensive reports from the participating states will be given by state delegates. Luncheon will be served at 12 noon.

Beginning at 1:30 p.m., Dr. L. R. Davenport will be the chairman of three panels: Panel on Diagnosis and Reporting, Panel on Animal and Human Prophylaxis on Control Techniques, and a Panel on Epizootiology (Urban and Sylvan).

Public Relations in Action

Dr. A. Grant Misener, Chicago, as the program chairman of the Rogers Park Kiwanis Club, invited Dr. Harry W. Boothe, president of the Chicago Veterinary Medical Association, to address the club's Dec. 19, 1957, meeting.

Dr. Boothe described the role of the veterinary profession in promoting the health of man, pointing out that some 80 diseases formerly transmissible from animals to man, are now practically limited to animals or are nonexistent, due to the work of veterinarians.

He also pointed out that many techniques in modern surgery and orthopedics were first developed by veterinarians in treating animals, for example, the use of pins in repairing fractures.

For many members of the Kiwanis Club, this presentation by Dr. Boothe was their first insight into the functions and scope of veterinary medicine.

Cornell's Summer Laboratory Course Sponsored by the National Science Foundation

This year, the Cornell summer laboratory course in Techniques and Applications of the Electron Microscope is being supported by a grant from the National Science Foundation. The course, which extends from June 16 to July 3, 1958, will be for senior workers in the biological and medical sciences.

It will include lectures covering the basic principles, methods, and applications of the electron microscope, and the laboratory work will offer the opportunity for instruction and practice in a wide range of techniques especially applicable to biological studies.

Primarily for scientists using the electron microscope in their research work, the course is under the direction of Prof. B. M. Siegel, who will be assisted in the lectures, discussions,

and demonstrations by a number of workers prominent in biological research applications of the electron microscope.

Registration for the course is limited. Applications for admittance should be made to Prof. B. M. Siegel, Rockefeller Hall, Cornell University, Ithaca, N. Y.

s/T. R. CUYKENDALL, *Director.*

Mrs. Sanem, AVMA Directory Department Head, Retires

Mrs. Mary B. Sanem, who joined the Association's central office staff in November, 1943, and who has been in charge of its membership records and directory department for the past 12 years, retired early in January. A native of Iowa and a long-time resident of Oak Park, a Chicago suburb, Mrs. Sanem and her husband plan to make their new home in Southern California where their two children and grandchildren now live.

AMONG THE STATES AND PROVINCES

California

Bay Counties Association.—The Bay Counties V.M.A. elected the following officers for the ensuing year: Drs. Richard J. Tompkins, Oakland, president; Maurice L. Boevers, Lafayette, vice-president; Thomas D. Harris, Jr., San Manteo, secretary; and Loris O. Johnson, San Jose, secretary.

Mr. Herb Warren, 3004 16 St., San Francisco 3, Calif., is executive secretary of the association.

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State Examinations.—To meet the continuing need for veterinarians in California, the California State Personnel Board has scheduled a series of nationwide examinations, it was announced Dec. 23, 1957.

The first of these tests for Veterinarian I, disease control and pathology, and for Veterinarian I, meat and poultry meat hygiene, is scheduled for February 25. The tests will be held monthly thereafter. California residence is not required but all candidates must be United States citizens. The deadlines for accepting applications for these examinations are approximately 30 days prior to the examination date.

Both positions require a doctor's degree in veterinary medicine from a recognized veterinary college. Students in their final year in such a college may take the examination but they must have the required degree before they are eligible for appointment.

Applicants who qualify for Veterinarian I, disease control and pathology, must also obtain a California license to practice veterinary medicine within a year of appointment.

These positions, which pay from $530 to $644 a month, are the entry levels in a series of classes covering a wide variety of veterinary work throughout California. Promotion to the class of Veterinarian II carries an increase in salary from $556 to $676. The class of Veterinarian III pays form $613 to $745.

For further information and official application forms, write to the State Personnel Board, 801 Capitol Ave., Sacramento 14, Calif.

Illinois

Interprofessional Council Honors Dr. Longenecker.—Dr. Herbert E. Longenecker, vice-president in charge of the professional colleges on the Chicago campus of the University of Illinois, received the annual distinguished service award of the Illinois Professional Council at its annual banquet on Jan. 21, 1958.

Dr. O. Norling Christiansen, president of the Council, presented the award and spoke of Dr. Longenecker's outstanding achievements in biochemistry, his record in health education, and his efforts for the betterment of the health and welfare of the people of Illinois.

The Illinois Interprofessional Council represents some 15,000 members in the healing arts.

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Chicago Association.—The regular monthly meeting of the Chicago V.M.A. was held Jan. 14, 1958, in the Lincoln Room of the La Salle Hotel.

Drs. Wayne Riser and Myron Bernstein discussed "Coxofemoral Subluxations—Illustrated."

s/MARK E. DAVENPORT, JR., *Secretary.*

Indiana

State Association.—The seventy-fourth annual convention of the Indiana V.M.A. was held Jan. 15-17, 1958, at the Severin Hotel in Indianapolis.

The program was divided into small animal and large animal sessions. The following veterinarians appeared on the small animal portion of the program: Drs. V. B. Robinson—Practical Pathology for the Practitioner (illustrated); Ellis P. Leonard—Practical Small Animal Surgery; and Robert P. Knowles—Canine Senility—How Come and So What.

During the large animal session, Dr. L. M. Hutchings, dean, School of Veterinary Medicine, Purdue University, extended greetings from the Chicago office of the AVMA, and the following veterinarians presented the subsequent discussions: G. H. Conner—The Main Dairy Cattle Problems; H. W. Dunne—Experimental Poisoning of Swine with Common Toxic Substances (illustrated); and R. L. Lundvall—Treatment of Some of the More Common Conditions Affecting the Shetland Pony (illustrated).

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Central Association.—The following veteri-

narians have been elected officers of the Central Indiana V.M.A. for the coming year: W. A. Tornes, Indianapolis, president; P. Johnson, Jr., Indianapolis, vice-president; C. H. Stengel, Indianapolis, secretary-treasurer; and J. Fleck, Noblesville, program chairman.

s/PETER JOHNSON, JR., *Vice-President.*

Kansas

Dr. Kelley Appointed Associate Professor at Kansas State College.—Dr. Donald C. Kelley (KSC '35) has been appointed an associate professor in the Department of Pathology at Kansas State College, according to an announcement from the office of President James A. McCain. The appointment became effective Jan. 15, 1958.

Dr. Kelley has been with the Veterinary Corps of the U. S. Army since 1935. He received his M.S. degree in 1952 and is a member of Phi Kappa Phi, Gamma Sigma Delta, the AVMA, American Board of Veterinary Public Health, Institute of Food Technologists, and the Association of Military Surgeons.

Dr. Kelley will be doing veterinary research in the Department of Pathology. He replaces Dr. Earl J. Splitter, who resigned last February to accept a position with the U. S. Department of Agriculture in Washington, D. C.

Kentucky

Women's Auxiliary.—The semiannual luncheon and business meeting of the Women's Auxiliary to the Kentucky V.M.A. was held Dec. 9, 1957, in the Phoenix Hotel, Lexington, with an attendance of 60. At the present time, membership in the auxiliary has increased to 136 members.

It was voted at the business meeting to make the wives of the veterinarians, who were given life memberships in the Kentucky V.M.A., life members of the Kentucky Auxiliary. A donation of $10 was voted to the Research Fund and $25 to the Student Loan Fund.

s/MRS. ROBERT H. FOLSOM, *Secretary-Treasurer.*

Michigan

Annual Postgraduate Conference for Veterinarians at Michigan State.—The thirty-fifth annual postgraduate conference for veterinarians was held Jan. 22-23, 1958, as part of the continuing education program of the College of Veterinary Medicine at Michigan State University. A program for the veterinarians' wives was held in conjunction with the conference.

Each afternoon was divided into a split program: the farm animal section and the small animal section. Among the speakers, and their respective subjects, appearing at the conference were: J. W. Trumble—Sheep Scab Diagnosis, Control, and Treatment; R. L. Johnston—Liver Biopsy for Diagnosis of Hepatic Disease; R. D. Shuman—Swine Erysipelas (illustrated); W. O. Brinker, R. G. Schirmer, R. F. Johnston—Tranquilizers, Clinical Evaluation, and Toxicology; W. K. Applehof—Wing Pinioning; and R. W. Kirk—Rational Use of Fluids in Small Animal Practice.

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Dr. Davidson Ordained as Episcopal Church Deacon.—Dr. J. Lavere Davidson (OSU '33), head of the veterinary medical department of the Upjohn Company, Kalamazoo, was ordained a perpetual deacon in the Episcopal Church on Dec. 18, 1957, and has been assigned a curate in St. Luke's Church in Kalamazoo. His duties will be chiefly to assist in divine services, parish calls, mission work, and the church school.

Dr. Davidson has been studying for his ordainment for four years in order to qualify for canonical examinations, comparable to the state board veterinary medical examinations. As a perpetual deacon, he is allowed to continue his secular work during the week.

[Several years ago, Dr. William G. Love (UP'33) was ordained in the Episcopal clergy and is no longer active in veterinary medicine, having been assigned to Trinity Church, New York City (*see* JOURNAL, October, 1949, p. 281). There are undoubtedly other veterinarians who are ordained clergymen and are serving the church part-time or full-time.—Editor.]

Missouri

Greater St. Louis Association.—The Greater St. Louis V.M.A. held its annual meeting Jan. 3, 1958, at the St. Louis City Hospital, Institute of Medical Education and Research, in St. Louis.

Dr. Joseph Lucido, chest surgeon, visiting staff member of St. Louis City Hospital, and formerly assistant professor of clinical surgery at St. Louis University, presented a demonstration of thoracic surgery. Mr. Roy Abernathy, technician, Institute of Medical Education and Research, assisted Dr. Lucido in the operation.

s/CHESTER R. PLEGGE, *Correspondent.*

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Women's Auxiliary.—The Women's Auxiliary to the Greater St. Louis V.M.A. met at the nurses residence across from the St. Louis City Hospital at 8:00 p.m. on Jan. 3, 1958.

Miss Evelyn Koenig, R.N., instructor in nursing arts, City Hospital School of Nursing, led a general discussion in pediatric nursing.

s/CHESTER R. PLEGGE, *Correspondent.*

North Carolina

Piedmont Association.—The newly elected officers of the Piedmont V.M.A. for the ensuing year are: Drs. John G. Martin, Boone, president; D. Earl Hightower, Jefferson, vice-president; and Ted L. James, Newton, secretary.

Tennessee

State Association.—The fiftieth annual meeting of the Tennessee V.M.A. met in Nashville at the Andrew Jackson Hotel, Jan. 12-14, 1958.

Dr. E. Converse Peirce, II (M.D.), chief surgeon of the Acuff Clinic in Knoxville, demonstrated "Ventricular Fibrillations and Cardiac Resuscitation."

On the second and third days of the meeting, the following veterinarians appeared on the program: Drs. C. E. Kord, L. E. Fredrickson, R. J. Anderson, J. D. Ray, W. M. Coffee, L. O. Lewellyn, S. L. Kalison, A. M. Mills, and Quentin F. McDonald.

Texas

Dr. D. E. Davis Accepts Position with Rockefeller Foundation.—Dr. Donald E. Davis (OSU '52), assistant professor, Department of Veterinary Microbiology, Texas A. & M. College, has accepted a position as animal pathologist with the Rockefeller Foundation.

Dr. Donald E. Davis

He has been assigned to the Rockefeller Foundation's Mexican Agricultural Program, with headquarters in Mexico City, effective Jan. 1, 1958.

In association with the late Dr. John P. Delaplane, Dr. Davis has carried on research in virus diseases of poultry. His work on ornithosis in turkeys has been significant both to the turkey grower and in the field of public health.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. are reported as of Nov. 29, Dec. 2, 4, 12, and 31, 1957.

TRANSFERS

Janis V. Auskelis, from Spokane, Wash., to Red Bluff, Calif.

Charles G. Collins, from St. Paul, Minn., to Chippewa Falls, Wis.

Martin Kagan, from Alexandria Bay, N.Y., to Albuquerque, N. M.

Robert J. Keller, from Oklahoma City, Okla., to St. Louis, Mo.

Charles O. McCullough, from Wichita, Kan., to Portland, Ore.

Renato C. Salerno, from Chicago, Ill. to Madison, Wis.

William R. Strieber, from Jefferson City, Mo., to Charleston, W. Va.

Paul O. Thomas, from Kansas City, Kan., to Nampa, Idaho.

Antanas Voliuskis, from Ottumwa, Iowa, to Flint, Mich.

William L. Wake, from Montgomery, Ala., to Chicago, Ill.

John L. Wilbur, Jr., from Helena, Mont., to Fort Worth, Texas.

James P. Whitman, Jr., from St. Louis, Mo., to San Antonio, Texas.

RETIREMENTS

Clyde D. Bailey, St. Louis, Mo.
John C. Hanson, Bismarck, N. Dak.
Clarence B. Lord, Phoenix, Ariz.
Edward N. Tierney, Washington, D.C.

STATE BOARD EXAMINATIONS

DISTRICT OF COLUMBIA—June 26, 1958, Department of Occupations and Professions, 1740 Massachusetts Ave., N.W., Washington, D.C. A. F. McEwan, 1740 Massachusetts Ave., N.W., Washington 6, D.C., secretary.

KENTUCKY—Feb. 24 and July 28, 1958, University of Kentucky, Lexington. J. K. Bushnell, 229 Houston, Paris, Ky.

NEW YORK—June 18, 19, 1958, practical examination, Ithaca; June 24-27, 1958, written examination, New York City, Albany, Syracuse, Buffalo, and Rochester. John W. Paige, chief, Bureau of Examinations and Registrations, 23 S. Pearl St., Albany, N.Y.

NORTH DAKOTA—April 9-10, 1958, Fargo. M. C. Hawn, secretary-treasurer, 1407 13 St. N., Fargo, N. Dak.

OKLAHOMA—May 20-22, 1958, College of Veterinary Medicine, Oklahoma State University, Stillwater. Dr. Robert S. Todd, secretary-treasurer, Oklahoma Board of Veterinary Medical Examiners, 310 State Capitol, Oklahoma City, Okla.

DEATHS

Star indicates member of AVMA

★**Harrison V. Baker** (COR '14), 64, Hamburg, N.Y., died Nov. 13, 1957, at Buffalo General Hospital, after a short illness.

Dr. Baker was recognized as an authority on Standardbred horses and harness racing, and was accredited with making Western New York harness racing a success.

He served as track veterinarian and announcer at Buffalo Raceway from 1942 to 1957, and as announcer at Batavia Downs from 1940 to 1955. Dr. Baker had also been an announcer for the famed Hambletonian at Goshen for 14 years, until the race was transferred to Duquoin, Ill., in 1957.

Last January, Dr. Baker was elected president of the Erie County Agricultural Society. Previously, he had served in various other

offices of the society and, as the first vice-president last year, he headed the grounds committee and was harness racing secretary of the society.

Dr. Baker was a past-president of both the New York State and the Western New York Veterinary Medical Associations. He is survived by his wife, the former Helen Foote, a son, and a daughter.

Shelby G. Gray, 88, Walton, Ind., died Nov. 4, 1957, at Memorial Hospital.

Dr. Gray had retired from veterinary practice a number of years ago. His wife, the former Mary Katherine Lathshaw, died in May, 1946.

Clarence W. Guthrie, 86, Charleston, Ill., died Sept. 24, 1957, at the Kuster Nursing Home in Bethany, Ill., where he had been a patient for over six months.

Dr. Guthrie had been a practicing veterinarian for 53 years at the time of his retirement in June, 1953.

He is survived by three sisters.

Arnold E. Hasselbalch (KCV '12), 67, St. Edward, Neb., died in December, 1957.

Dr. Hasselbalch, a lifetime resident of St. Edward, conducted his practice there until failing health dictated his retirement. He was a World War I veteran, a member of the American Legion, and a past-member of the Nebraska V.M.A.

Surviving Dr. Hasselbalch are his wife, the former Myrtle Dress, a son, Dr. Neil Hasselbalch, also a veterinarian, and a daughter.

A. W. Koester, 76, Milan, Mo., died Oct. 18, 1957, after a brief illness.

Dr. Koester had practiced veterinary medicine in Milan for more than 40 years.

He is survived by his widow, Mrs. May Koester, and a son.

Howard H. Malcom, 56, Ada, Okla., died Nov. 11, 1957, in an auto accident.

Before moving to Ada, where he was associated with his brother in practice, Dr. Malcolm had operated an animal hospital in Seminole, Okla.

He is survived by his brother, Dr. E. C. Malcom.

J. Alex Still, 84, Plant City, Ala., died in October, 1957. Dr. Still had been in failing health for several weeks.

He is survived by his widow, Fannie Lee Still.

Julius G. Wattenberg (KCV '16), 67, Washington, Mo., died in St. Luke's Hospital, Sept. 21, 1957.

Dr. Wattenberg had been engaged in general practice in Washington, Mo., from 1919, up until the time of his death.

Allen A. Wilhelm (CIN '20), 63, Bellevue, Ohio, died Nov. 8, 1957, after a short illness.

Before moving to Bellevue, Dr. Wilhelm had lived in Fostoria, Ohio, where he had been a Grand Knight of the Knights of Columbus. In Bellevue. Dr. Wilhelm was a former Commander of the American Legion, and had practiced veterinary medicine there for 24 years at the time of his death.

Dr. Wilhelm is survived by his widow, Marguerite O'Mara Wilhelm, three daughters, and two sons.

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Other Deaths Reported.—The following deaths have been reported. The usual information for an obituary was not supplied.

Abraham J. Farley (KCV '04), Los Angeles, Calif., died July 16, 1957.

Clarence B. Henderson (KCV '09), Topeka, Kan., died Nov. 23, 1955.

Ward B. Herleman (CVC '10), Waynesboro, Ga.

Edward H. Kilian (KCV '05), Manhattan, Kan., died July 19, 1956.

★Velma W. McDermott (COL '48), Goleta, Calif.

Joseph W. Parker, Kansas City, Kan., died in October, 1957.

William J. Walsh (KCV '18), Creston, Iowa, died Sept. 27, 1957.

P. B. Scott (CHI '06), Galesburg, Ill., died Nov. 10, 1957.

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STUDENT CHAPTER ACTIVITIES

The Women's Auxiliary to the AVMA Student Chapter at Iowa State College

The officers of the student auxiliary at Ames, are — Mrs. Russell Scheikopf (1), president; Mrs. Robert Maahs (2), vice-president; Mrs. Merle Lockwood (3), secretary; Mrs. Larry Herbold (4), treasurer; and Mrs. Durwood Baker (5), advisor.

WOMEN'S AUXILIARY

President—Mrs. Leslie H. Moe, 1814 W. Third Ave., Stillwater, Okla.
Secretary—Mrs. A. W. Eivers, 1595 N. 18th, Salem, Ore.

Projects for Auxiliary Public Relations Committees.—We, the Auxiliary Public Relations Media Committee of the AVMA Women's Auxiliary, realize that the prime reason for our committee is to give greater elasticity to the AVMA PR program. To insure this objective, it is imperative that each affiliated auxiliary appoint a PR chairman and committee.

The following are suggested AVMA-approved public relations projects to aid the auxiliaries embarking on PR committee work.

1) Introduce farm news editors of newspapers and farm publications to the AVMA Press Service, a monthly sheet containing ten to 12 timely topics for livestock owners.
2) Introduce radio and television farm program directors to Farm Radio-TV Briefs, a bi-monthly script of ten to 12 short items on veterinary progress in fighting animal diseases.
3) Acquaint the principals, career counselors, and librarians of public schools with the free AVMA booklet, "Veterinary Medicine as a Career."
4) Aid your veterinarian husband to prepare material for speaking engagements before local nonmedical organizations.
5) Assist the men's group in organizing interprofessional meetings on topics of zoonosis.
6) Operate a clipping service of newspaper articles pertaining to veterinarians and veterinary medicine.
7) Promote radio and television programs.

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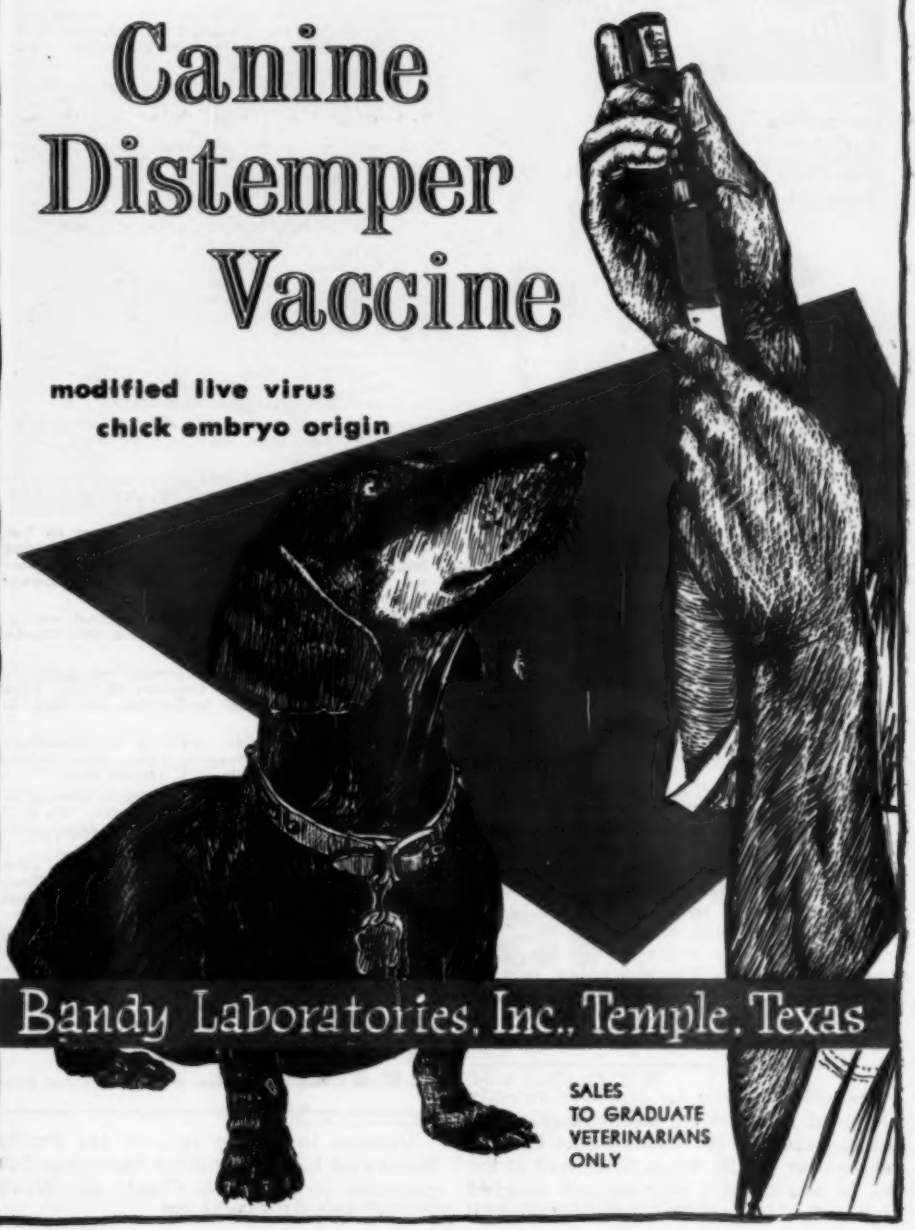

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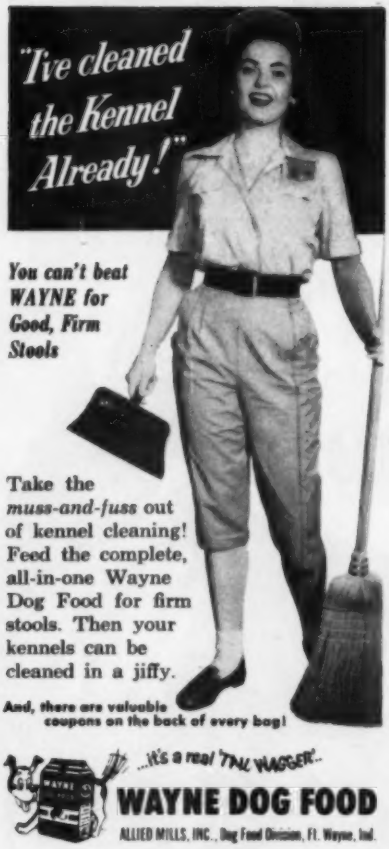
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AVMA Women's Auxiliary—Continued

Brian Forster, with this committee, has prepared a listing of the above projects with brief instructions concerning procedure. This listing is available upon request from the AVMA Auxiliary PR Media Committee chairman.

In these many ways we, the wives of veterinarians, can present to the general public the professional capabilities of our husbands. This is not a temporary activity with immediate results but, like a life insurance policy, requires time to mature and earn dividends.

s/Mrs. J. J. Fishler, *Chairman,*
Public Relations Media Committee.

The oldest gorilla in captivity recently celebrated his thirtieth anniversary at the Philadelphia zoo. He stands 6 feet tall and weighs over 400 lb. When he arrived at the zoo, he was about 1 year old and weighed 12 lb.—*Sci. News Letter (Aug. 17, 1957).*

COMING MEETINGS

Colorado State University. Nineteenth annual veterinary conference. Glover Veterinary Hospital, College of Veterinary Medicine, Colorado State University, Fort Collins, Colo., Feb. 17-19, 1958, Lloyd C. Moss, head Department of Medicine, Colorado State University, secretary.

Illinois State Veterinary Medical Association. Annual convention. LaSalle Hotel, Chicago, Feb. 17-19, 1958. C. B. Hostetler, 1385 Whitcomb Ave., Des Plaines, Ill., executive-secretary.

Indiana Veterinary Medical Association. Symposium on therapeutic nutrition. Marion, Ind., Feb. 21, 1958. J. M. Carter, 3421 S. Main St., Elkhart, Ind., chairman.

The American Animal Hospital Association. Region One meeting. Washington Hotel, Washington, D.C., Feb. 27, 1958. Lester R. Barto, executive board.

Nevada Veterinary Medical Association. Annual meeting. Hotel Holiday, Reno, Feb. 28 to March 1, 1958. J. B. Key, Tonopah, secretary.

District of Columbia Veterinary Medical Association. Annual meeting. Dart Auditorium, Armed Forces Institute of Pathology, Washington, D.C., March 11, 1958, at 8:p.m. William I. Gay, 5200 Chandler St., Bethesda, Md., secretary-treasurer.

Alabama Veterinary Medical Association. Annual meeting. Hotel Stafford, Tuscaloosa, March 16-18, 1958. McKenzie Heath, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, secretary.

Washington, State College of. Annual Conference of Veterinarians. Pullman, Wash. April 7-9, 1958. W. R. Leader, program chairman.

American Animal Hospital Association. Silver anniversary meeting. Drake Hotel, Chicago, Ill., April 25-26, 1958. Dr. Wayne H. Riser, secretary.

Oklahoma State University. Oklahoma conference for Veterinarians. College of Veterinary Medicine, Oklahoma State University, Stillwater, May 5-6, 1958. Lester Johnson, Department of Veterinary Medicine and Surgery, chairman.

Michigan Veterinary Medical Association. Annual meeting. Grand Hotel, Mackinaw Island, June 2-4, 1958. Charles Coy, Hillsdale, general chairman.

Texas A. & M. College. Eleventh annual Texas conference for veterinarians. School of Veterinary Medicine, Texas A. & M. College, College Station, June 5-6, 1958, R. D. Turk, chairman.

Kansas State College. Annual conference for veterinarians. School of Veterinary Medicine, Kansas State College, Manhattan, June 5-7, 1958. E. E. Leasure, dean.

Georgia-South Carolina Veterinary Medical Association. Joint Meeting. Bon Air Hotel, Augusta, Ga., June 19-21 1958. A.M. Mills, 325 Pinecrest Drive, Athens, Ga., secretary, program committee.

North Carolina State Veterinary Medical Association. Fifty-seventh annual meeting. The Washington Duke Hotel, Durham, June 24-26, 1958. C. J. Lange, 3741 Hi-Point Rd., Greenboro, secretary-treasurer.

Canadian Veterinary Medical Association. Tenth annual Convention. Royal Alexander Hotel, Winnipeg, Manitoba. July 21-23, 1958. Claude Kealey, 1195 Wellington St., Ottawa 3, Ont., executive secretary.

New York State Veterinary Medical Society. Sixty-seventh annual meeting. Concord Hotel, Kiamesha Lake, N. Y., Sept. 10-12, 1958. Joan S. Halat, 803 Varick St., Utica, N. Y., executive secretary.

New England Veterinary Medical Association. Annual meet-

Declines in salmon runs in the Pacific Northwest have endangered more than 100 canneries on the Pacific Coast.—*Sci. News Letter (Dec. 21, 1957): 399.*

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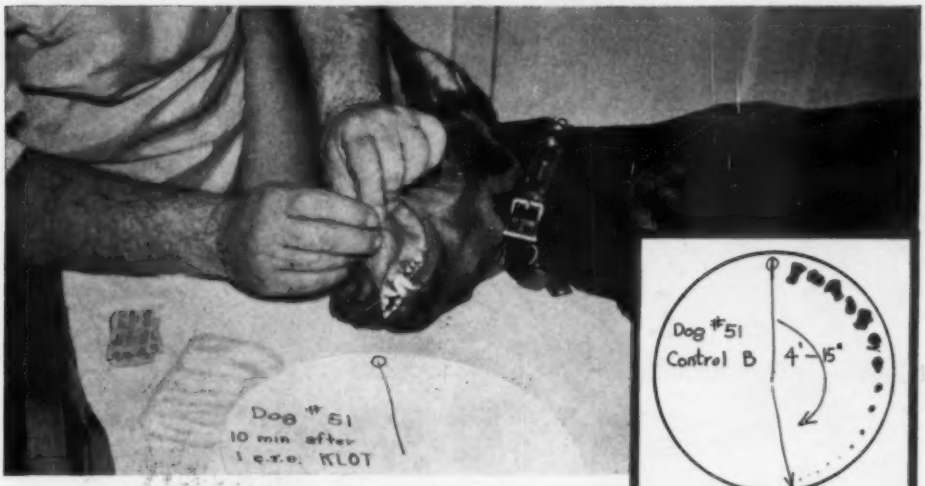

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ing. Hotel Wentworth, Portsmouth, N. H., Sept. 21-24, 1958. C. Lawrence Blakely, 100 Longwood Ave., Boston 15, Mass., secretary-treasurer.

Foreign Meetings

Sixth International Congresses on Tropical Medicine and Malaria. Lisbon, Portugal, Sept. 5-13, 1958. Professor Manuel R. Pinto, Institute of Tropical Medicine, Lisbon, secretary-general. (Membership application forms may be obtained by U.S. veterinarians by writing to the AVMA.)

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. Dr. G. W. Jones, Main St., Prattville, Ala., secretary-treasurer.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, Decatur, Ala., secretary.

North East Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2 Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16 St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month, Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. R. M. Granfield, 2600 W. El Camino Real, San Mateo, Calif., secretary-treasurer.

Redwood Empire Veterinary Medical Association, the

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third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. Dr. Rolf Reese, 23815 Ventura Blvd., Calabasas, Calif., secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinary Medical Association, the second Thursday of each month. D. E. Britten, 544 N. Ben Maddox, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyea, 5925 Edgewater Drive, Orlando, Fla., secretary.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, in St. Petersburg. R. L. Brutus, 336 E. 15th St., Hialeah, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodsons Restaurant. P. S. Roy, 4443 Atlantic Blvd., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. T. R. Geci, 108B Catherine Ave., Pensacola, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. J. J. McCarthy, 500-25th Street, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Barrow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Frank Mueller, Jr., 4148 E. 8th Ave., Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. W. B. Martin, Jr., 3002 N. W. 6th St., Gainesville, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the

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Figure 1

History.—A Thoroughbred filly, 4 years old, was reported by the owner to have been lame on the right foreleg for about two weeks. There was an exaggerated "toe-in" of the foot but no swelling or heat in the pastern region. A subluxation of the coffin joint was suspected. A dorsovolar radiograph of the digit was taken.

(Diagnosis and findings are reported on next page)

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Osteochondritis dissecans of the medial condyle of the second phalanx of the right foreleg of a horse (somewhat comparable to a Freiberg's infraction, a lesion of a metacarpal bone in man) and a lateral subluxation of the second phalanx.

Author's Comment.—When the erosion or "crushed" condition of the medial condyle of the second phalanx and its altered relationship to the navicular bone are considered, it is difficult to understand why the lameness was noticed for only "about two weeks." Because of the hopeless prognosis, the case was not treated.

Fig. 2—A radiograph (dorsovolar view) of the digit showing the lateral subluxation (a) of the second phalanx, the eroded lesion (b), and the navicular bone (c) in normal position.

Comment (P. J. Meginnis, Illinois).—A similar lesion, but on the distal articular surface of the third metacarpal, was recently seen on necropsy of a Thoroughbred gelding (fig. 3). No mention of this condition in the horse could be found in the literature.

Fig. 3—Distal view of dissected third metacarpal of a horse showing osteochondritis dissecans lesions (arrows) on both condyles (Meginnis case).

[A similar lesion was shown in the JOURNAL (Jan. 1, 1957: 32).]

This case was submitted by Dr. F. J. Milne, M.R.C.V.S., professor of Surgery and Obstetrics, Ontario Veterinary College, Guelph, Ont.

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Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Association, the second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. Dr. J. G. Irwin, Iowa City, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer, Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. Richard Baum, Osage, secretary.

KANSAS—Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Tuesday of each month. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kansas, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Varsailles Rd., Frankfoed, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville

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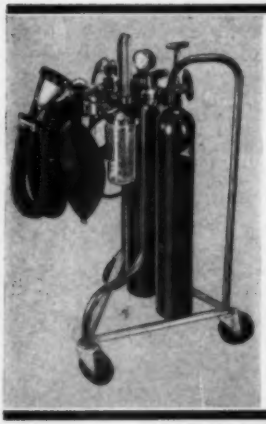

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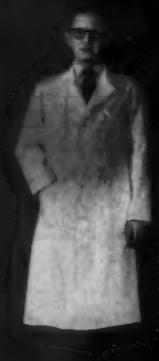

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or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Norman Herbert, 3506 Joann Drive, Baltimore 7, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Chester R. Plegge, 4249 Peck St., St. Louis 7, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Tuesday of each month. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kansas, secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. R. Muller, 43 Church St., Lambertville, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. R. M. Sauer, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

New York State Veterinary College, Annual conference for veterinarians. Cornell University, Ithaca. W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y., dean.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Keep Teat **OPEN** Keep it **MEDICATED**

Keep it ***MILKING***

INJURED TEATS, SCAB TEATS, STENOSIS, POST-OPERATIVELY

To maintain unrestricted milk flow and provide antiseptic protection is of first importance in the successful treatment of teat troubles. Dr. Naylor Dilators act both MEDICALLY and MECHANICALLY to provide broad spectrum germicidal activity and gentle, non-irritating support to traumatized sphincter and teat mucosa.

Contain Sulfathiazole — the self-contained anti-microbial medication in Dr. Naylor Dilators provides full time antiseptic activity in the entire streak canal. They do not depend upon packaging ointment for antiseptic or therapeutic properties. The medication is IN the Dilators and is released slowly IN the teat to combat infection, reduce inflammation and keep streak canal open to promote normal healing, natural milking. Positive retention in large or small teats!

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Dispensing Package
16 Dilators

Dr. Naylor's
MEDICATED
Teat Dilators

H. W. NAYLOR CO., Manufacturing Chemists, **MORRIS, N.Y.**

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly, Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. Ted L. James, Box 243, Newton, N. Car.

Twin Carolinas Veterinary Medical Association, the third Thursday of each month in the Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. James R. Burgess, Rockingham, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every other month at 7:00 p.m., in the George Vanderbilt Hotel, Ashville, N. Car. Vilu Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April, and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the third Tuesday of each month, at 9:00 p. m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, Akron, Ohio, secretary-treasurer.

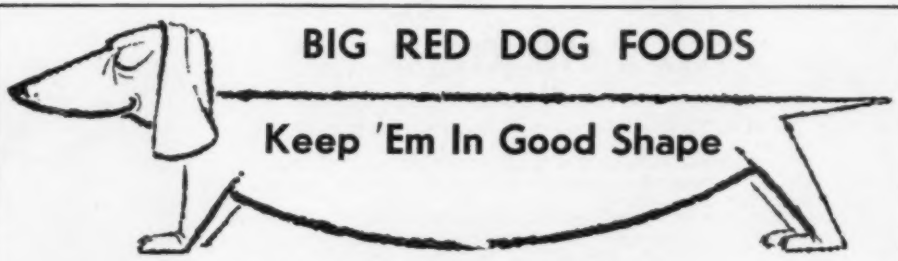
Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m., Ireland's Restaurant, Lloyds', 710 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinarian Medical Association, the third



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Continual testing guarantees strict adherence to these formulas.

The Meal and the Pellets are "complete" foods. They contain the right proteins, fats, vitamins, and minerals in the right amounts. *No* supplemental feeding is necessary.

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BIG RED DOG FOODS

Tuesday of each month, except July and August, at the Marion Hotel, Salem. Marvin M. Corff, McMinnville, Ore., secretary

PENNSYLVANIA—Lehigh Valley Veterinary Medical Association, the first Tuesday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania, School of Veterinary Medicine, Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference, the second Tuesday of each month. Francis E. Mullen, 1150 S. Main St., Harrisonburg, Va., secretary-treasurer.

Northern Virginia Veterinary Society, the Second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blackburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. I. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.). R. J. O'Hern, P.O. Box 617, Cumberland, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. R. H. Steinkraus, 7701 N. 59th St., Milwaukee, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. W. E. Lyle, P. O. Box 107, Deerfield, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. E. S. Scobell, Rt. 2, Wausau, Wis., secretary.

A rattlesnake's head moves 20 feet per second during a strike.—*Sci. News Letter (Dec. 7, 1957): 366.*

IMPREGNATED WITH LANOLIN

TROPICAL

FLEA POWDER

KILLS ALL FLEAS IN MINUTES

Kills even those fleas immune to D.D.T., Lindane, Chlordane, etc. Prevents drying, has low toxicity.

NOT A DRY DUST - Each micronized particle of cosmetic grade talc is impregnated with chemicals. Contains Deodorized Malathion-Methoxychlor, Dichlorophene (fungicide), Hexachlorophene (germicide and deodorant).

CAT POWDER approved for cats; safe for kittens and small puppies.

YOUR OWN PRIVATE LABEL AT NO EXTRA CHARGE is available on all Florida Veterinary Laboratories Co. products.

TROPICAL TICK DIP CONCENTRATE
Kills resistant or immune species. Low toxicity.

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A neutral detergent containing Hexachlorophene and Lanolin Esters.

TROPICAL TICK AND FLEA SPRAY
A safer, more effective non-staining residual spray for home and kennel.

TROPICAL KENNEL DUST
Kills Fleas and Ticks on hosts and in kennels.

TROPICAL TICK SALVE
Kills Ticks and Mites in ears and between toes.

ASK YOUR VETERINARIAN JOBBER

FLORIDA VETERINARY LABORATORIES CO.
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1038 N. W. 21st Terrace, Miami, Florida

new specific treatment for calf scours

Developed specifically for the control of calf scours, new ENTEFUR provides rapid, effective and safe treatment. ENTEFUR drastically cuts mortality.[1,2] In one study, 60 of 63 ENTEFUR-treated calves survived, whereas in the control group only 3 of 24 calves lived.[2] "ENTEFUR treatment appeared the only factor modifying significantly the course and outcome of the disease."[2]

ENTEFUR contains the new nitrofuran, Furamazone® (brand of nifuraldezone) for rapid wide-spectrum bactericidal action against gram-positive and gram-negative enteric bacteria. ENTEFUR also contains bismuth subsalicylate for its mildly astringent, antidiarrheal action.

ENTEFUR BOLUS VETERINARY, small, contains: Furamazone 1 Gm., bismuth subsalicylate 0.26 Gm. Dosage: 1 bolus twice a day for 2 days. Supplied: Box of 24 (6 envelopes of 4 boluses each).

REFERENCES: 1. Bull, W. S.: N. Amer. Vet., in press. 2. Henry, R. T., and Blackburn, E. G.: Vet. Med., in press.

ENTEFUR™

NOW AVAILABLE THROUGH YOUR PROFESSIONAL VETERINARY DISTRIBUTOR

EATON LABORATORIES, NORWICH, NEW YORK

new "far superior" treatment for retained placenta

Therapeutic failure, frequently encountered in retained placenta, can be prevented—with new FUREA Veterinary which combines the potent wide-range bactericidal and deodorizing action of FURACIN® (brand of nitrofurazone) with the cleansing action of urea. FUREA Veterinary boluses disintegrate readily and are nonirritating and nontoxic.

In retained placenta, treatment with FUREA has produced quick improvement of the general condition of the cow with lessening or elimination of malodor. Fertility rate remained unimpaired in over 90% of treated cows.*

SUPPLIED: Each bolus contains 0.12 grams of FURACIN and 12 grams urea. Bottle of 25.

DOSE: Two boluses inserted into the recently pregnant horn. One bolus may be placed in the non-pregnant horn.

*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

For vaginal infections, including those caused by Vibrio fetus, that may prevent conception, or cause abortion, dispense: FURACIN Suppositories Veterinary, large. Box of 12.

FUREA T.M.
VETERINARY

AVAILABLE THROUGH YOUR PROFESSIONAL VETERINARY DISTRIBUTOR

Provides an accurate pattern against which to cut with knife or razor blade. Fits firmly, cannot move or slip when clamped into position. Made of non-rusting, light, cast aluminum, highly polished. Lasts a lifetime with minimum care. Simplicity of design and construction reduces possibility of breakage or mechanical failure. Forms immediately available to provide distinctive marking of these breeds:

Boxer — postpaid $15.00
Boston Terrier — postpaid $15.00
Great Dane — postpaid $15.00
Doberman — postpaid $15.00
Set of above four — postpaid $50.00

These patented "championship" forms are patterned after markings of winners of top honors in show competition. Forms for other breeds made on special order. Sold to veterinarians only. Send check or money order.

MacALLAN LABORATORIES

2126 Forest Road Lansing 10, Mich.

Parlam Builds New Plant

Parlam Corporation, manufacturer of Mikedimide and a line of other ethical veterinary drugs, is moving to larger quarters in New Jersey. The modern new plant is located at the corner of Dean St. and Forest Ave. in Englewood.

Parlam's new plant in Englewood, N.J.

In designing the structure, the architect considered maximum efficient operation of office and laboratories, flow of materials, comfort of working conditions, lighting, and ease of maintenance.

Clara Garay, Myron Pantzer, and Milton Feier, directors of the firm at the cornerstone-laying, stated that the building will be occupied in February, 1958, and will provide three times the floor space of their previous plant in New York City.

CLASSIFIED ADVERTISEMENTS

PERSONAL WANT ADS—$4.00 for the first 25 words and 10 cents for each additional word; 35 cents for use of box number.

COMMERCIAL WANT ADS—$5.00 for the first 25 words, 25 cents for each additional word; $1.00 for use of box number.

THE TOTAL WORD COUNT must include complete box number address or personal address line.

Remittance must accompany ad.

DEADLINES

1st of month issue — 8th of month preceding date of issue.

15th of month issue — 22nd of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

General practitioner with Connecticut license wanted to take full charge of modern animal hospital and large animal practice. Living quarters for single man. Opportunity for lease or sale to qualified individual. Address "Box A 4," c/o JOURNAL of the AVMA.

Research worker in veterinary medical viruses. Experience in tissue culture preferred. Write Glen L. Dunlap, Haver-Lockhart Laboratories, Box 676, Kansas City, Mo.

Experienced, New York licensed relief veterinarian for April 5-12. Small animals, Westchester County. Excellent living-quarters. State salary. Address "Box B 42," c/o JOURNAL of the AVMA.

Assistant veterinarian for Philadelphia small animal practice; excellent working conditions and family living-quarters. State qualifications and salary expected; send recent photograph. Dr. Joseph M. O'Neal, Haverford & Malvern Aves., Philadelphia, Pa.

Assistant, leading to partnership, for Long Island, N.Y., small animal hospital. License not essential but must be eligible for state boards. Excellent opportunity; state qualifications and salary expected. Address "Box B 26," c/o JOURNAL of the AVMA.

Wanted—Positions

Relief veterinarian, experienced and competent, will operate your practice while you are on vacation. Available for New York City and suburbs. Licensed in New York and Connecticut. Address "Box A 36," c/o JOURNAL of the AVMA.

Graduating June, 1958, Colorado; desire position with established practitioner, leading to eventual partnership after trial term. Consider any location. Married, veteran, age 31, not afraid of hard work or long hours; completely reliable, with best of references. Interview or picture on request. Will answer all letters. Address "Box B 39," c/o JOURNAL of the AVMA.

Pharmaceutical chemist available—fully experienced plant management, production supervision, and development. Human or veterinary. Middlewest or West. Address "Box B 31," c/o JOURNAL of the AVMA.

D.V.M., Texas '57, experienced, completes military obligation in March, desires association leading to purchase of mixed practice. Licensed in Texas and reciprocal states. Address "Box B 38," c/o JOURNAL of the AVMA.

Veterinarian, approved school, 12 years' experience, large animals and mixed practice, desires position in mixed practice. No special location preferred. Address "Box B 36," c/o JOURNAL of the AVMA.

Veterinarian, 37, foreign, desires permanent position in industry, pertaining to research or related professional services, including foreign endeavor. 12 years' experience in own practice; familiar with diagnostic procedures. Address "Box B 37," c/o JOURNAL of the AVMA.

Second year veterinary student, with two summers' experience in small animal hospital, would like summer job with large animal practitioner, anywhere in U.S. or Canada. Willing and able to learn and work. Available second week in May. Address "Box B 43," c/o JOURNAL of the AVMA.

Wanted—Practices

Young, personable veterinarian, with two years' small animal experience, desires to lease a small animal hospital. Willing to work as partner for one year prior to leasing. Address "Box B 33," c/o JOURNAL of the AVMA.

Desire to purchase or lease mixed practice in Middlewest. Address "Box B 41," c/o JOURNAL of the AVMA.

Desire to purchase small animal hospital south of Cambria and north of Long Beach, Calif. Experienced, progressive, and eager to discuss business by return mail. Address "Box B 44," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

For immediate sale—modern small animal hospital and residence on Long Island. Some capital and rapid action required. Address "Box B 6," c/o JOURNAL of the AVMA.

Wisconsin dairy practice for sale at price of real estate and inventory; 1½-year gross will equal selling price. Reason for selling: interested in small animal partnership. Address "Box B 13," c/o JOURNAL of the AVMA.

Established 20 years, new modern small animal hospital, large active practice, instruments, drugs, 5-room apartment. In a fast-growing community, 25,000 population, 60 miles from New York City. Reason: health. All for the price of the real estate; details on inquiry. Home separate deal. Address "Box B 27," c/o JOURNAL of the AVMA.

Central Illinois mixed practice, mainly large animal, for sale; excellent paying clientele. New home; 1,550 square footage, full basement, acre lot. Write for details. Address "Box B 40," c/o JOURNAL of the AVMA.

(*Classified ads continued on adv. p.* 48)

Castle's 777 SpeedClave...

reaches spore-killing temperatures in 4-8 minutes!

Here you have the simplest and quickest way to sterilize—with Castle's 777.

The 777 SpeedClave gives you added protection from Canine Infectious Hepatitis and other communicable small animal diseases. Completely automatic. You just load it..."set it and forget it." It reaches spore-killing temperatures fast. Sterilizes in minutes, then shuts itself off automatically.

It's the perfect answer for your small-load processing. And it's economical . . . saves instrument wear . . . saves time . . . and the initial cost is surprisingly low.

See your Castle dealer or mail coupon for complete details.

Please send descriptive bulletin on the 777 SpeedClave.

Name.....

Address.....

Castle LIGHTS & STERILIZERS

Wilmot Castle Company • 1766O East Henrietta Rd., Rochester, N.Y.

General practice for sale in Iowa; $16,000 annual gross. Swine, beef, dairy cattle. Clients good pay, 60% farm owners. Modern home and office. Terms. Address "Box B 25," c/o JOURNAL of the AVMA.

Mixed practice for sale in southern Michigan. Includes hospital, drugs, equipment. Full price $13,000 cash. Gross 1957 $20,000. Address "Box B 28," c/o JOURNAL of the AVMA.

New, modern pet hospital for lease, San Francisco Bay area, to sincere, thoroughly responsible and reliable veterinarian. Address "Box B 29," c/o JOURNAL of the AVMA.

Attractive, modern, well-established small animal hospital, excellent practice, for sale due to death of owner; includes real estate. Located suburban southeastern city over half million population. Will require substantial cash. Address "Box B 35," c/o JOURNAL of the AVMA.

For sale, in tidewater Virginia, a general practice grossing an average of $17,000 for the last seven years. Large animal practice (60%) steady; small animal practice increasing as summer resort and retirement population increases. Ranch-type house and hospital included. Entering partnership. Terms can be arranged. $35,000. Address "Box B 30," c/o JOURNAL of the AVMA.

Long-established, active small animal hospital, completely modern, for sale or lease. Only animal hospital in middlewest city of 55,000 population. Address "Box B 32," c/o JOURNAL of the AVMA.

Texas mixed practice for sale in rich dairy center. Home, modern clinic, ½-acre land; gross $30,000 per year. Price: $29,000; $7,000 cash. Serious inquiries only. Address "Box B 34," c/o JOURNAL of the AVMA.

Miscellaneous

Pregnancy diagnosis in mares—45th to 150th day. Request mailing tubes; $7.00, 2 or more, $6.00 each. Pregnancy Diagnostic Laboratories, Dysart, Iowa.

Upjohn Announces Veterinary Division

The formation of a Veterinary Division within The Upjohn Company has been announced by Donald S. Gilmore, chairman of the board and managing director of the pharmaceutical firm.

The new division, headed by Gordon G. Stocking, D.V.M., was formed by the consolidation of four departments: veterinary medical, headed by J. L. Davidson, D.V.M.; veterinary sales, managed by S. P. Hurley; veterinary research, headed by H. S. Bryan, D.V.M.; and veterinary advertising, headed by W. J. Upjohn.

The consolidation, according to Mr. Gilmore, will integrate veterinary activities, and accelerate the development of new products to fit the needs of veterinarians.

Upjohn's veterinary products, manufactured in the Company's 33-acre plant, are available to the profession through the 18 Upjohn branches in the country.

BROKEN TEETH
—repaired in bottom clipper blades. Top and bottom blades sharpened to match. Save money—Guaranteed. Prices on Request
HIGHLY SPECIALIZED SHARPENING
Sales—Repairing on Oster and Stewart clippers.
Sharpened Blades Tested on Rabbit Fur
OSTER A-2 STEWART
Prompt Service—Est. 17 years
CLIPPER SERVICE Oak Ridge, N. J.

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save safely on hog cholera vaccinations

SWIVINE is completely nontransmissible and cannot cause a disease outbreak or regain virulence by back passage.

SWIVINE has a distinct margin of safety over vaccines derived from blood or laboratory tissues of swine, because the Swivine virus is modified by hundreds of passages through rabbits, which are not a natural host to any swine disease. Therefore, Swivine cannot infect vaccinated pigs with any other swine disease.

SWIVINE with serum provides protection that is immediate, continuous, lasting—*and economical.*

Available in 2, 5, 25 and 50 dose packages.

PITMAN-MOORE COMPANY
division of
ALLIED LABORATORIES, INC.
INDIANAPOLIS 6, INDIANA

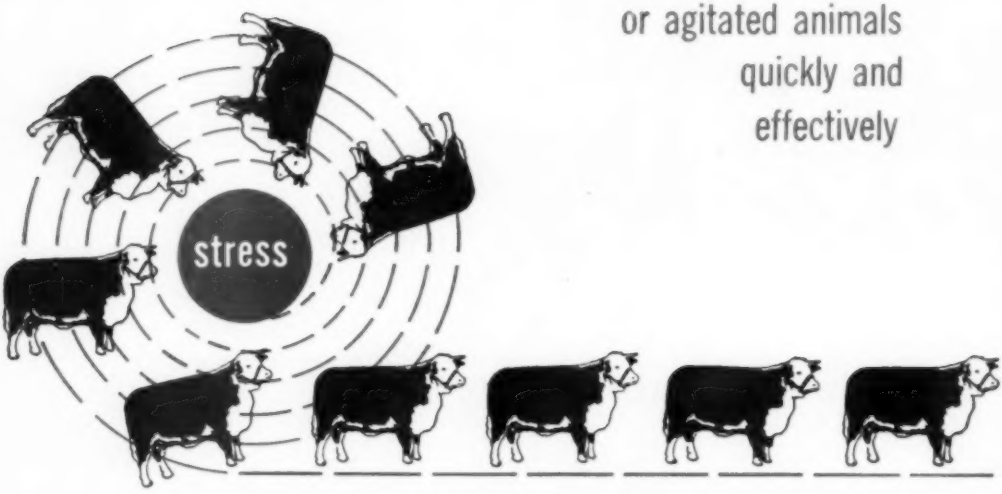
IN LARGE OR SMALL HERDS.....

*SWIVINE**

immunizes rapidly, solidly

*Trade Mark

relieves **environmental stress,**
unwinds excitable
or agitated animals
quickly and
effectively



DIQUEL

the first tranquilizing agent developed specifically to broaden the scope of animal stress therapy...

Introduction of Diquel provides the veterinary profession with the first tranquilizing agent developed solely as a central nervous system depressant for both large and small animals.

new versatility!

A phenothiazine derivative, Diquel presents unprecedented versatility in clinical use. Depending upon dosage and route of administration, a single dose produces effects ranging from mild tranquilization to profound sedation, with visible effective activity of from 1 to 3 days duration.

wide range of safety!

Oral, intramuscular and intravenous doses up to twice those recommended produce no evidence of inhibited response to stimulation or impairment of normal body functions.

expanded pharmacological activity!

In contrast to milder-acting tranquilizers and others of phenothiazine derivation, the pharmacological activity of Diquel is markedly broad. Antispasmodic, anti-inflammatory and antihistaminic properties are 2 to 40 times greater than in other agents currently available.

direct application in cases of stress!

To the large animal practitioner, Diquel offers an expanded approach to the control of stress resulting from movement and handling of cattle or due to strange environment. As a means of restraint, it provides chemical restraint for rectal examinations, obstetrical procedures and minor surgery.

adds basic therapy to symptomatic relief!

In small animal practice, Diquel fills the need for a drug that offers sedation and direct antispasmodic, anti-inflammatory and antihistaminic activity. Diquel reduces awareness of irritation at the same time it treats the cause.

Diquel is supplied in 100 cc. vials of 50 mg./cc.; in 50 cc. vials of 25 mg./cc., and in jars of 50-50 mg. scored tablets.

Jensen-Salsbery
Laboratories, Inc.
Kansas City, Missouri

Jen-Sal